The IRON AGE
July 4, 1957
The National Metalworking Weekly

Benjamin F. Fairless:

What Makes For Real Success In Business? P. 35

Forgings Will Get Tighter in Second Half – P.120

New Test Ties Casting Soundness to Strength – P. 75

Digest of the Week P. 2-3

FRANKIE SURE SPENDS A LOT OF TIME STREAMLININ' THAT SHOVEL.
HE'D TAKE IT HOME AT NIGHT, IF THE COMPANY D LET 'IM.
WITH ALL THAT WORK HE STILL CAN'T THROW THE DOLOMITE OVER THE FRONT BANK--!
THANKS TO FREDERICK C. STEINMETZ AMERICAN STEEL & WIRE WORCESTER, MASS.
KUEKES

The Shovel Expert

WHY NOT DESCRIBE YOUR OPEN-HEARTH CARTOON IDEA AND SEND IT ALONG TO US?

The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

BASIC INCORPORATED 845 HANNA BUILDING • CLEVELAND 15, OHIO

Tool Steel Topics

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

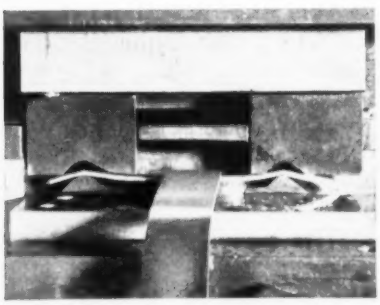
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Maker of Beer-Can Openers Likes Economy of Lehigh H

Precision Manufacturing Company, San Antonio, Texas, needed a tool steel to produce a strong, long-wearing die with which one of their customers could economically manufacture beer-can openers. They put the problem up to their local tool-steel distributor, Earle M. Jorgensen Co., who recommended Bethlehem Lehigh H. "Our experience with this air-hardening grade has shown us how it stands up," the Jorgensen people said. "It's resistant to wear and, besides, has low distortion in heat-treatment."

The die was heat-treated by Cook Heat Treating Company, Houston, Texas. It was placed in service in a 56-ton press, where it was fed C 1035 cold-rolled strip, 0.065 in. thick. Performance was excellent, the die performing economically at the high speed at which the press operated. About 800,000 pieces were produced between grinds.



Lehigh H, our high-carbon, high-chromium grade of air-hardening tool steel, is ideal for tough assignments because of its outstanding wear-resistance and toughness. It is well known for its minimum distortion in heat-treatment, and high compressive strength.

TYPICAL ANALYSIS

Carbon 1.55	Molybdenum 0.80
Chromium 11.50	Vanadium 0.40

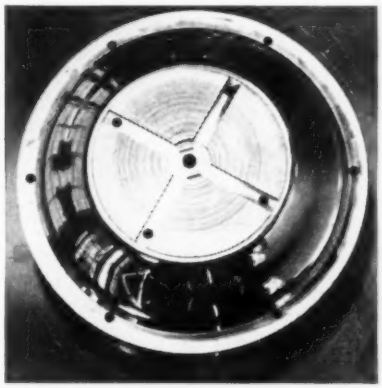
Look into the advantages of Lehigh H by giving it a try. Chances are good that your local Bethlehem tool steel distributor has Lehigh H in stock. Give him a call.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Follow Up With Temper When Drilling Hardened Tools

When necessary to drill holes in hardened tools or dies to incorporate dimensional changes, such drilling is usually done with a triangular drill made of a cast stellite or a sintered carbide. This type of drill operates by generating frictional heat sufficient to locally anneal the steel, so that the cutting edges can scrape the metal away in the path of the drill. All tool steel grades, regardless of how high the hardness developed by heat-treatment, can be drilled in this manner.

It is obvious that such a procedure will produce stresses in tools or dies which, because of heat-treatment, already contain residual stresses. It is important, therefore, that the drilling operation on hardened tools always be followed by a tempering operation. Tempering should be carried out at a temperature equal to, or slightly below, the final temper used in the original heat-treatment operations.



Lustre-Die Provides High Sheen When Making Plastic Parts

This core for a plastic injection mold, made by Interstate Mold & Hobbing Co., Union, N. J., is for use in manufacturing a decorative bowl for household use. It is made of Lustre-Die, an electric-furnace steel of well-balanced analysis, which we alloy-fortify to increase its depth of hardenability and mechanical properties. Use Lustre-Die when you want unusually high sheen on plastic parts. You'll like it.

THE IRON AGE
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The IRON AGE

JULY 4, 1957—Vol. 180, No. 1

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Less Than Expected—Some say U. S. Steel's $6 a ton steel price hike is inadequate. Others call it unjustified. Many factors had to be weighed before going ahead with the increase. P. 38

ENAMELED ALUMINUM

Seeks New Markets—Porcelain enamel on aluminum expects to make a 500 pct market gain by 1961. Biggest potential market is construction. Others include appliances, transportation. P. 41

INFLATION CONTINUES

No Relief in Sight—The experts warn of trouble over inflation. Today's dollar is worth 49.8¢ of the 1940 dollar. And prices continue to spiral upward. The main sources of trouble appear destined to continue virtually unchecked. P. 42

MILITARY PAY HASSLE

Are Skills Worth More?—The Cordiner report on military pay,

Metalworking

NOTES ON SUCCESS: During 45 years in the steel business, Ben Fairless has known many outstanding, successful men. All of them, he observes, have some of the same qualities in heaping measure. It takes more than just ability to reach the top. P. 35

which would compensate men on merit rather than time in service, has had less than enthusiastic reception in the White House. A Senate committee is strongly in favor of it. P. 57

IMPORTED AUTOS

More Coming—Decision by GM to import its small cars to compete in the U. S. economy car market is a change in policy. The company plans to find out if the public wants a small car and if it must be European. P. 52

FEATURE ARTICLES

LIGHT ALLOY CASTINGS

X-rays Check Strength — Tests show the correlation between X-ray quality of aluminum and magnesium castings and their tensile strength. The radiographic techniques can be effectively used to check strength. It's a non-destructive test method, and a good time and money saver. P. 75

OSCILLATING SHEAR

Cuts Angles—Mount a square shear on a swivel base and you have the makings of a step-saving tool. The Budd Co. has done this and found that it pays off as a full-time production technique. Sheet blanks are prepared quickly right from coil stock. P. 78

STEEL RULE DIES

For Heavy Duty — Steel rule blanking dies are standing up to heavy duty use and showing their ability to take it. Male-female types rival their conventional counterparts. Cost savings result. P. 80

SCREW THREADS

How To Gage—Difficulty is often experienced in accurate gaging of screw threads. It actually isn't hard at all. It's a matter of using the right tool in the right place. Here are a few techniques in proper use of available gages. P. 82

DIECASTING OUTPUT

Integrated Line—When separate items of equipment are brought together to form a little production line, the increased output can be surprising. One company finds greater quality of parts, less handling, and greater production of parts per floor area. P. 86

MARKETS & PRICES

TELEVISION SALES

Spurt Coming—TV receiver sales are running only one pct behind a year ago. And inventories are down. It looks like last-half output will approach or possibly exceed the record set in 1955. P. 40

VACUUM METALLURGY

It's Growing—The art of refining metals in a vacuum is having growing pains, but it's coming of age fast. The method is widely used for high-purity nonferrous and for superalloy production. P. 43

NEW WESTERN MARKETS

The List Lengthens—Throughout the Farwest, new and expanding industries show up almost daily. They not only sell to Farwesterners, they become customers themselves. Better bring your prospect list up to date. P. 59

U. S. TOOL RENTALS

Rates Bring Protests — Small metalworking firms charge that ODM's new tool rental rates favor large companies. Protests against "ridiculously low" rates are flooding into congressmen's offices. P. 61

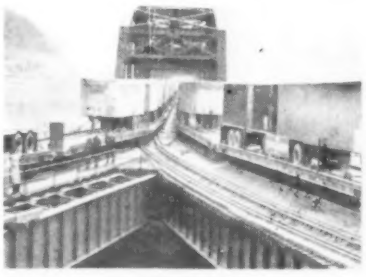
STEEL BREAKTHROUGH

Outlook Improves—Steel market in July is expected to make a better showing than had been expected. It could be a harbinger of a stronger market to come. Output, consumption could set record. P. 119

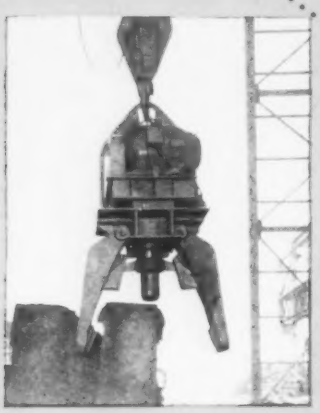
NEXT WEEK

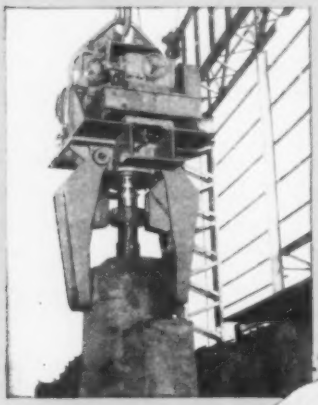
TRAFFIC SAVINGS

A New Approach—Wide awake companies are saving money today through a unified approach to traffic problems. Next week's special report will show how intelligent planning can bring big savings in this too-often-neglected area.



450 TON
portable ingot stripper
in action





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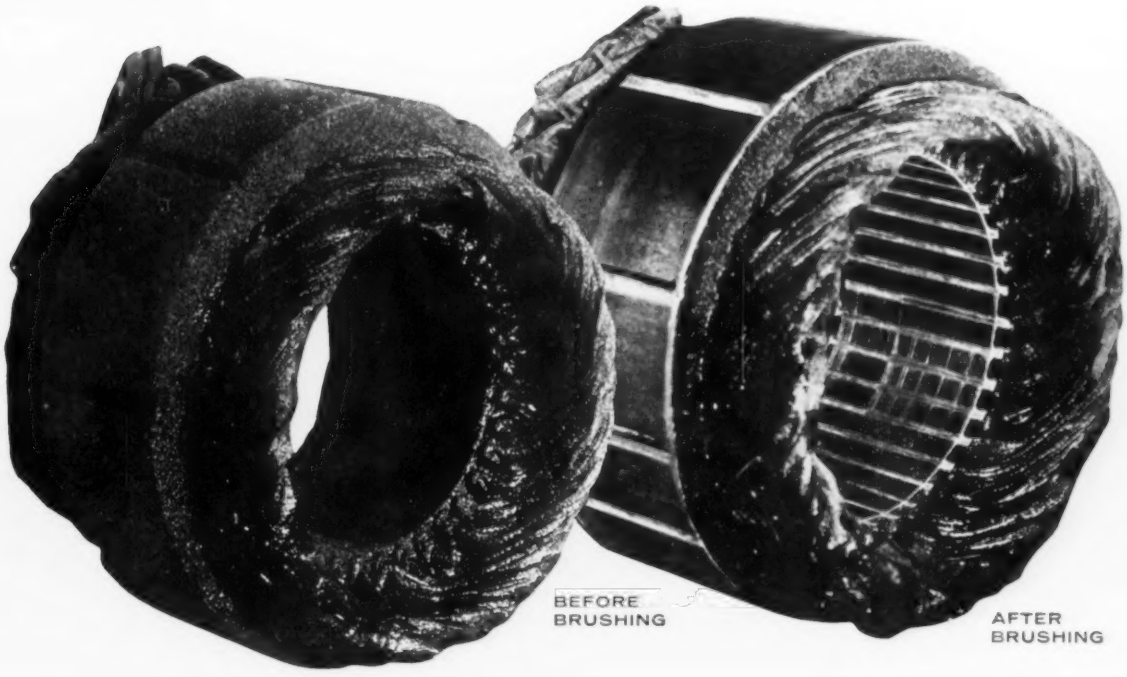

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The Honeymoon Is Over Now Let's Get Down To Work

Sure money's tight. And it is going to get tighter before it gets easier. What's more, the days of easy sales are over. We must work hard for them now—and in the future.

No matter how scarce money gets we have to modernize and think fast if we are to stay in business. How we get the wherewithall is up to us. But if we don't get relief from heavy costs and lack of profit our goose may be cooked.

We won't get any help from Uncle Sam. He is knee deep in hangover from unbridled spending. He is in the unenviable position of asking for reform, restraint and common sense.

We won't get help from labor. As long as there is a labor shortage—and a Walter Reuther—we can be sure of inordinate wage demands.

Looking to our customers? They can't help us either. They have troubles of their own. They know why we have to raise prices. They know it costs money to build and to pay higher wages. They ought to. They are facing the same things.

Maybe they are having more trouble than we are. They are running into rebellion on prices they have been forced to put on their end-products. So they must absorb, gripe and pare costs —if they can. Their mood is not a happy one.

Lest you be led astray: We are talking strictly about those who see the handwriting on the wall. It isn't in Sanskrit either. There are many who don't see what's coming—or what's here.

Gone are the shortages, the easy and long-term orders. Gone for a time are the crises that help sell and expand the backlogs. In the face of little or no relief we are due for more inflation, more problems and more troubles.

Does this mean we have to give up? Lie down and whimper? Run to Washington? Blame the other fellow? View and point with alarm? Hardly! It wouldn't help one iota.

We could admit that the honeymoon is over. It will be difficult. We won't hit 100 pct all of the time but we'll have business based on level-headed thinking, planning and hard work.

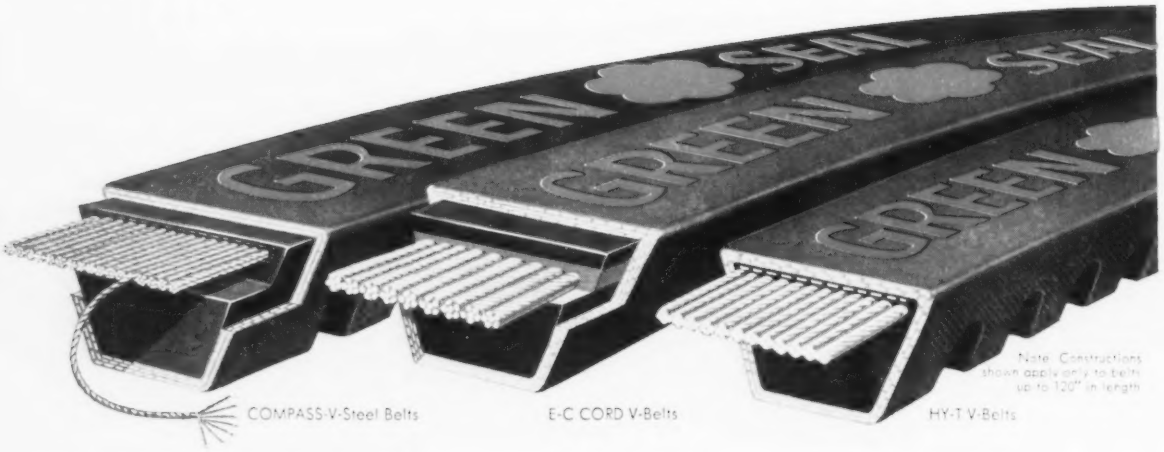
We will have less hysteria. Fewer crises-filled meetings and conventions. Idea clinics without nerve-wracking tension. That would be a happy change. But there is a catch.

A few can't do it all. More have to pitch in and realize this fact: The piper must always be paid. When he is—the feeling of solid achievement begins to take root again.

Tom Campbell

Editor-in-Chief

Now—V-Belts with the Green Seal solve the major multiple drive problem



The Green Seal stands for true dimensional stability in V-belts. And with Green Seal dimensionally stable belts you can be sure that matched sets are truly matched and will stay matched—that mismatching (the biggest problem in belting multiple drives successfully) is a thing of the past.

The key to dimensional stability lies in the tension members of the belt. For many years, steel cables as developed by Goodyear were the only length stable load carriers, but now they have been joined by synthetic cords, thanks to the amazing Triple-Tempered 3-T process.

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Compass, E-C Cord, Hy-T, Green Seal—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Dangerous Age

Sir—I certainly agree with you (June 13 editorial, "The Dangerous Age: We Are Deep In It Now") that CBS did this nation a favor by televising the Kruschchev interview. I do not believe that very many Americans were deceived but they did have the opportunity to see him face to face.

In my estimation, however, we should go further. We should use the broadcast as a means for insisting upon reciprocal rights in talking to the Russian people, and I doubt whether Kruschchev can be as confident of the reaction of Russians to our proposals as we are confident of the reaction of Americans to his.—L. B. Johnson, U. S. Senate, Office of the Democratic Leader, Washington, D. C.

Depreciation

Sir—Your June 6 article, "Let's Make Sense in Our Depreciation Policies" by Joel Barlow is in my opinion one of the most outstanding presentations on our depreciation policies. I wish to commend you for the manner in which you presented it which made the substance so easy to read and comprehend. You also very successfully emphasized the situations that should be called to the attention of both industry and government.

I hope you have taken the opportunity to have this article presented to many others who are no so fortunate as we are in receiving THE IRON AGE.

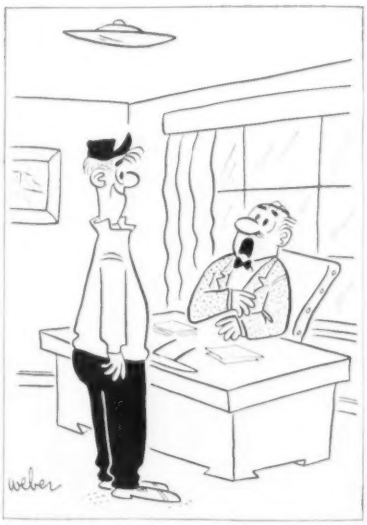
With best regards for your continued successful achievements.—N. A. Olsen, Deputy Director, Metalworking Equipment Div., Dept. of Commerce, Business and Defense Services Administration, Washington, D. C.

Sir—The article, "Let's Make Sense in Our Depreciation Policies" is indeed most interesting and informative. It is a subject that needs attention and I would like to commend you for your fine work in pointing up the problems involved.—D. S. Connor Exec. Vice Pres. and General Mgr., Micromatic Hone Corp., Detroit, Mich.

Ergonomics

Sir—Your June 13 article, "Ergonomics: A Human Guide to Machine Design," which you so splendidly developed, is a source of unusual and very favorable comment by our officers. In today's staff meeting, I proudly exhibited the current issue of THE IRON AGE so that my colleagues could see it again. I wish you could have been present to hear their pleased reactions.

It is an example of fine writing on a difficult subject, which required much unusual digging to get not only the facts but the interesting sidelights to make it appeal to readers.—W. Seely, Public Relations Vice Pres., The Warner & Swasey Co., Cleveland, Ohio.



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Only a fraction of the cost of conventional Male & Female Dies. The larger the die the greater the proportionate savings.

Come complete with line-up pins ready to attach to your die set.

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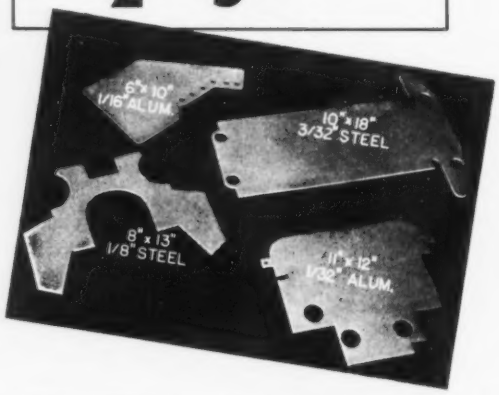

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SOLVE YOUR DIE MAKER SHORTAGE

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MINIMUM PRODUCTION ON STEEL AND SIMILAR METALS

THICKNESS	MINIMUM	MAXIMUM
1/32 STEEL	100,000	UNKNOWN
1/16 STEEL	100,000	UNKNOWN
3/32 STEEL	75,000	UNKNOWN
1/8 STEEL	50,000	UNKNOWN

MAXIMUM UNKNOWN AS DIES HAVE NEVER BEEN RUN TO DESTRUCTION

MINIMUM PRODUCTION ON ALUMINUM AND SIMILAR METALS

THICKNESS	MINIMUM	MAXIMUM
1/16 ALUMINUM	125,000	UNKNOWN
3/32 ALUMINUM	100,000	UNKNOWN
1/8 ALUMINUM	75,000	UNKNOWN
5/32 ALUMINUM	50,000	UNKNOWN
3/16 ALUMINUM	40,000	UNKNOWN

MAXIMUM UNKNOWN AS DIES HAVE NEVER BEEN RUN TO DESTRUCTION

The Best Buy is an Accurate Die

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FATIGUE CRACKS

On Success

If you were to ask 10 different people to define success, chances are you'd get 10 different answers. As for us, we like the one given by Ben Fairless in this week's Special Report, beginning on page 35.

As you might expect from a man of Mr. Fairless' character, his definition takes in a lot more than the mere urge to get ahead, important as that is. He mentions the importance of character, humaneness, the ability to understand people and—above all—a man's responsibility to society.

Tom Campbell, left, and Ben Fairless at Albany meeting.

Importance of Religion — Tom Campbell, THE IRON AGE's editor-in-chief, has been a longtime admirer of Mr. Fairless. It goes back to the days when Tom was covering the steel beat for us in Pittsburgh. Not too long ago they found themselves at a meeting of business and religious leaders in Albany, N. Y., sponsored by the Episcopal Dioceses of Albany. (see above). That was just after Tom took to sporting a crew cut.

At this business-religion meeting (THE IRON AGE, Oct. 27, '55, p 42), Mr. Fairless said: "There have always been business men who have practiced their religion seriously seven days a week . . . but in recent years I know from personal relations . . . that this characteristic is becoming a much greater force in our daily life . . ."

On a more personal note: Tom recalls that before Mr. Fairless retired as chairman of U. S. Steel Corp., he used to be home on Friday after spending all week on the job. Now that he is president of American Iron and Steel Institute, Ben often doesn't make it home by Friday.

It seems that Mr. Fairless also includes the word "work" in his definition of success.

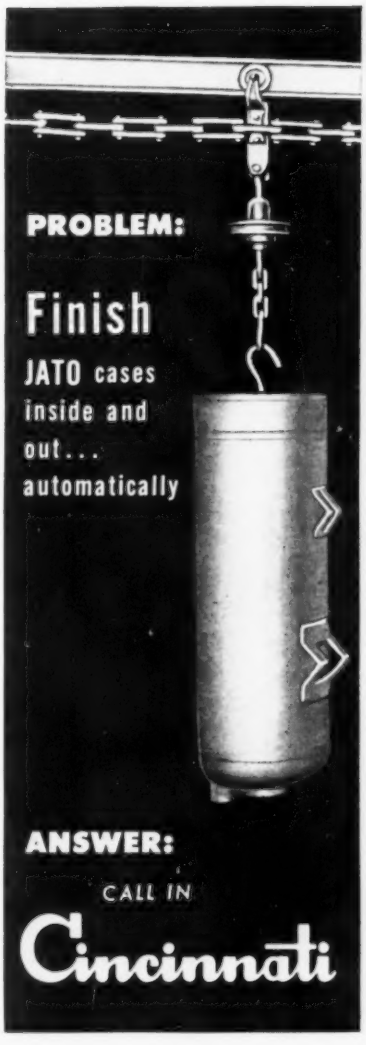
Money Problems

Some folks are indifferent to the state of the economy because the figures involved are too big for easy comprehension. The next time you shrug your shoulders over the abstract difference between a million dollars and a billion—remember this:

A business with expenses of $1,000 a day can run just two years and nine months on a million dollars. But with a billion—it could have started the day Christ was born and still have 800 years to run! Thanks to the Ullman Organization Executive Digest.

Puzzlers

Don't shoot. The waitress knew the man was a sailor because he was wearing a sailor's uniform. Oh, brother. Winners: Joe (old reliable) Brugman, Rheem Manufacturing Co., Downey, Calif.; Frank M. Wielgorecki, Electro-Motive Div., G. M. C.; J. P. Dowler, Purchasing Agent, The American Malleable Castings Co., Marion, Ohio; N. H. Sooy, Jr., The Kansas City Hay Press Co., Kansas City, Mo., and Thomas F. Manche, U. S. Steel Corp., Youngstown, Ohio.



JATO cases at Phillips Petroleum move continuously from cleaning through painting to the bake oven . . . hang vertically on indexing conveyor to rotate as they are painted—inside and out—in just two automatic operations.

Let CINCINNATI expedite your cleaning and finishing. For free survey, write today!

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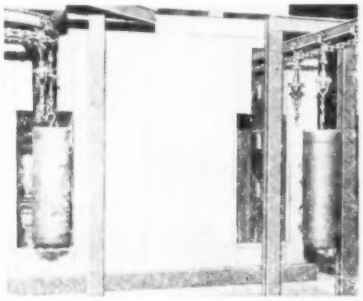
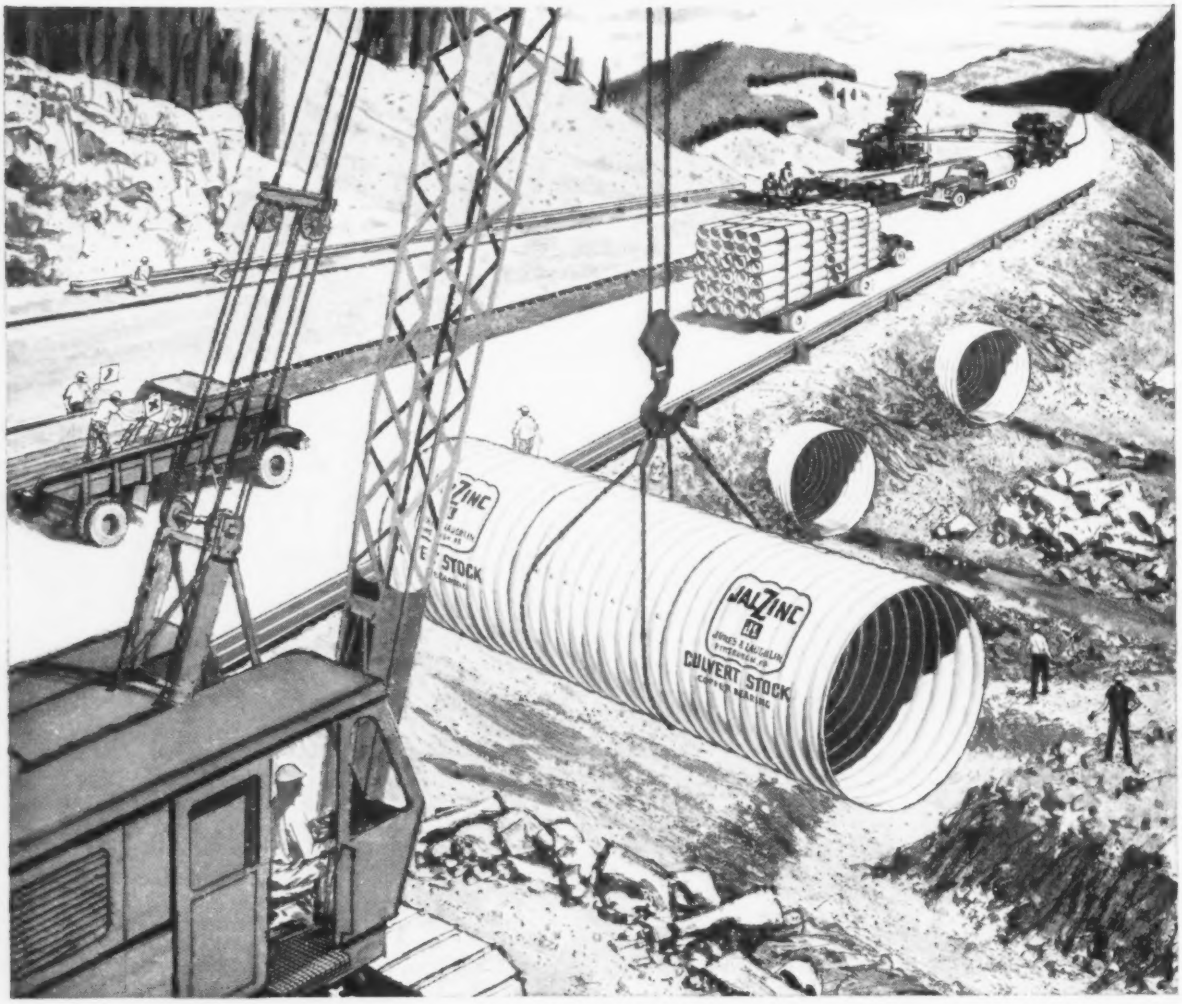


STEEL SETS THE PACE in highway construction...

Highway construction consumed 2,720,000 tons of steel in 1956.
Steel is the most used metal in modern technology.



JALZINC sets the pace in ZINC COATED STEEL QUALITY

JALZINC, Jones & Laughlin's new high quality zinc coated steel, is outstanding in ductility, formability and finish.

Produced on the most modern galvanizing mill in the world, JALZINC has a tight uniform coating that provides maximum durability and corrosion resistance. Coating weights from 1.00 oz. to 2.50 oz. per sq. ft. can be furnished depending on your end product needs.

Many products for highway construction, such as culverts, guard rails, metal arches, and road signs, look better and last longer when made from JALZINC sheets.

For complete details on new, high quality JALZINC, write to the Jones & Laughlin Steel Corporation, Dept. 403, Three Gateway Center, Pittsburgh 30, Pennsylvania, or call your local J&L district office.

Jones & Laughlin
STEEL
... a great name in steel

EXHIBITS, MEETINGS

Packaging & Handling Show—Oct. 28-31, Atlantic City. (SIPMHE, One Gateway Center, Pittsburgh 22.)

Metal Show — Nov. 2-8, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

JULY

Truck-Trailer Manufacturers Assn.—Summer meeting, July 16-17, Homestead, Hot Springs, Va. Society headquarters, 710 Albee Bldg., Washington 5, D. C.

National Tool & Die Manufacturers Assn.—Summer meeting, July 24-27, Grove Park Inn, Asheville, N. C. Society headquarters, 907 Public Square Bldg., Cleveland.

AUGUST

Society of Automotive Engineers—West Coast meeting, Aug. 12-15, Olympic Hotel, Seattle. Society headquarters, 485 Lexington Ave., New York.

American Institute of Electrical Engineers — Pacific general meeting, Aug. 28-30, Chinook Hotel, Yakima, Wash. Society headquarters, 33 W. 39th St., New York.

SEPTEMBER

American Mining Congress—Metal mining and industrial minerals convention, Sept. 9-11, Hotels Utah & Newhouse, Salt Lake City, Utah. Society headquarters, 1200 18th St., Washington, D. C.

Instrument Society of America—12th annual instrument-automation conference and exhibit, Sept. 9-13, Cleveland Auditorium, Cleveland Society headquarters, 313 Sixth Ave., Pittsburgh.

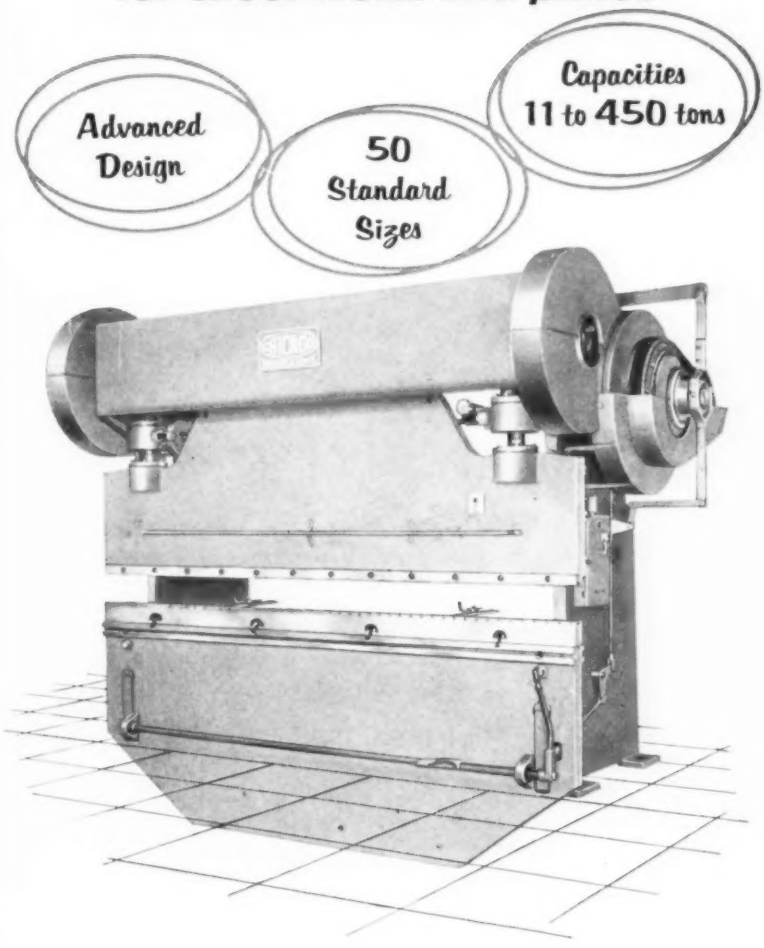
National Petroleum Assn.—Annual meeting, Sept. 11-13, Traymore Hotel, Atlantic City. Society headquarters, 958 Munsey Bldg., Washington.

Marking Device Assn. — National meeting, Sept. 19-20, Roosevelt

Continued on P. 16

CHICAGO® PRESS BRAKES

for sheet metal and plates



This is one of the Series D CHICAGO press brakes. It has a bending capacity of 10 feet by ¼ inch—150 tons. Over-all bending length is 12′-2″.

Complete recommendations for any job on request.

6777

CHICAGO DREIS & KRUMP

Press Brakes • Straight-Side-Type Presses • Press Brake Dies

Hand and Power Bending Brakes • Special Metal-Forming Machines

DREIS & KRUMP MANUFACTURING CO.

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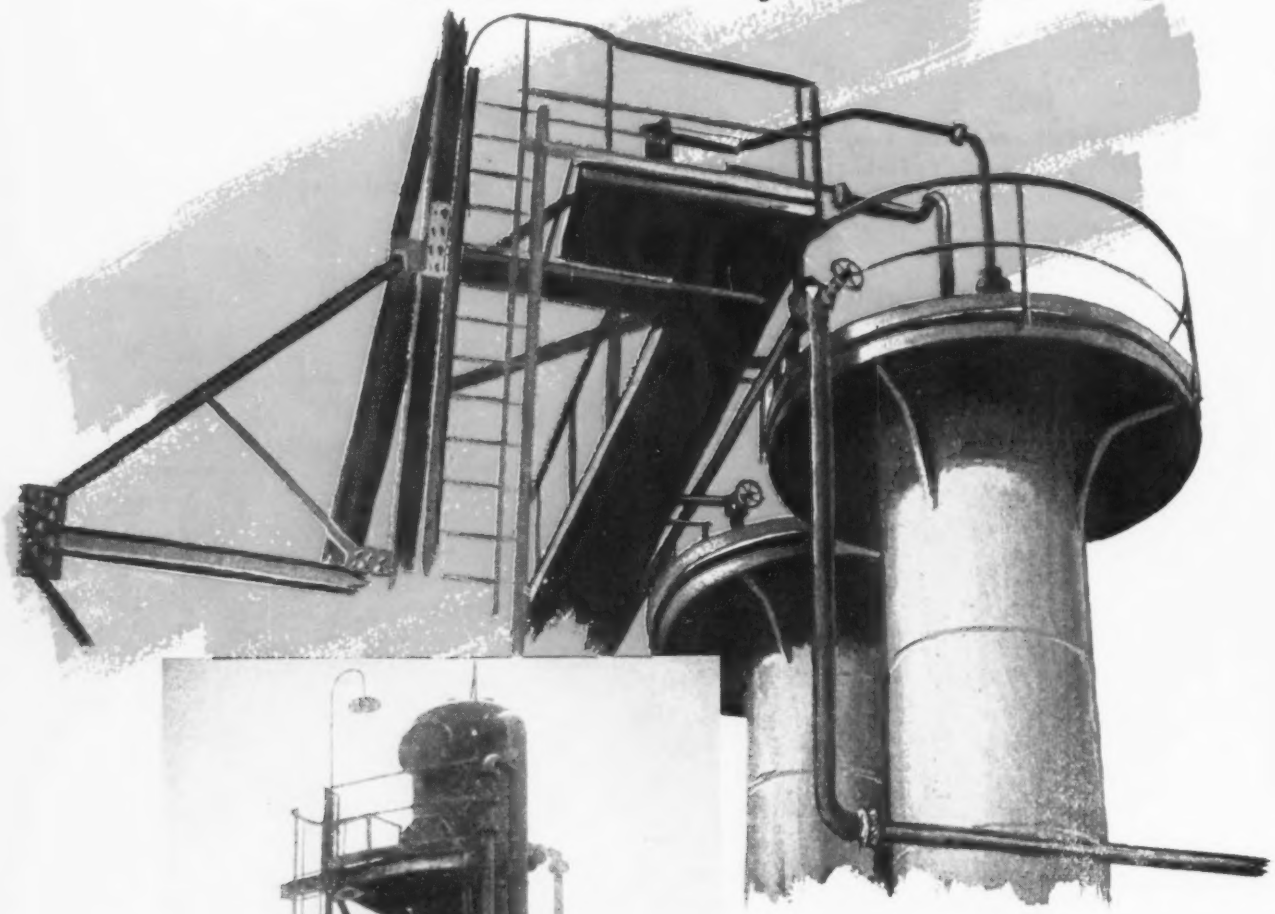
HAYNES Alloys solve the *tough*

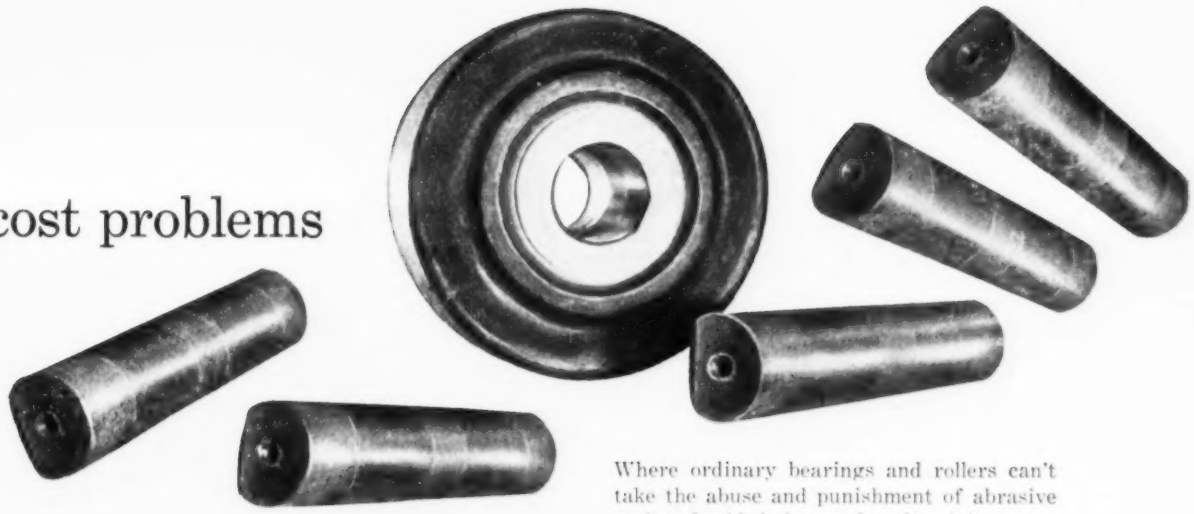


CORROSION

HASTELLOY Alloy B has a service life 30 to 40 times that of ordinary materials while handling highly reactive hydrogen chloride gas at a chemical plant.

In petroleum, chemical, or food processing industries—wherever you find highly corrosive conditions—HAYNES Alloys are long-wearing and most economical.

cost problems

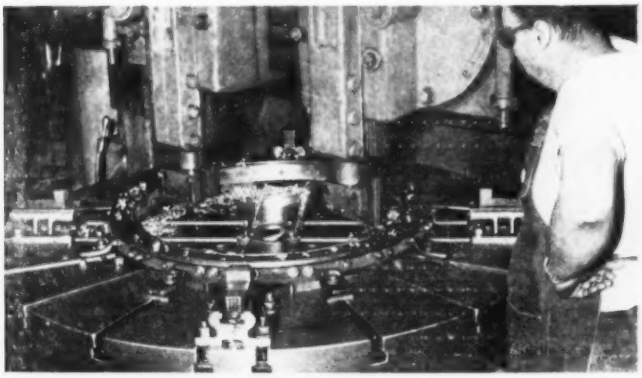


ABRASION

Where ordinary bearings and rollers can't take the abuse and punishment of abrasive rock and acid sludge, such as in mining operations, they are hard-faced with HAYNES STELLITE Alloy No. 6 and last for years instead of weeks! HAYNES Alloys reduce maintenance and replacement costs by giving long service.

Wherever you have a *tough* cost problem due to maintenance or replacement expense caused by excessive wear, heat, or corrosion, or where there is a complex design or production problem—investigate the use of HAYNES Alloys.

In practically every industry, you will find HAYNES Alloys helping to increase production and reduce maintenance—doing an efficient job at low cost. For information on HAYNES Alloys, contact our nearest sales office or write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana. Sales Offices in Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, and San Francisco.



MACHINING

HAYNES STELLITE 98M2 alloy tools remove metal fast in machining jet engine diaphragm rings. These tools take a $\frac{1}{2}$-in. cut and remove 55 cubic in. of metal in 15 minutes. About six rings now are machined per grind where other tools failed to finish even one. And tool service life has jumped over 600 per cent. Fast, precision machining with long tool life makes a big difference in production costs.

HAYNES
ALLOYS
HAYNES STELLITE COMPANY
Division of Union Carbide Corporation

UNION CARBIDE

"Haynes," "Haynes Stellite," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

an ounce of prevention!

It pays to periodically check the "health" of your blast-cleaning operation to prevent costs from creeping up. You may not be doing as well as say, a year ago. A check on abrasive prices (some have increased more than others), on abrasive consumption, on tonnage cleaned and on cost of replacement parts, will tell.

Such a check is easy to make using simple forms we supply. A sample set will be sent you on request.

One thing sure — if your operation is "ailing," Malleabrasive will cure, as it has in hundreds of other plants.

Competent service personnel available without obligation.

Sold by Pangborn Corporation, and by leading distributors of foundry supplies from coast to coast.

MALLEABRASIVE

THE GLOBE STEEL ABRASIVE CO., MANSFIELD, OHIO ®

1907—Fiftieth Anniversary—1957

EXHIBITS, MEETINGS

Continued from P. 13

Hotel, New Orleans. Society headquarters, 912 Chicago Ave., Evanston, Ill.

Steel Founders' Society of America—Fall meeting, Sept. 23-24, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

The American Society of Mechanical Engineers—Fall meeting, Sept. 23-25, Statler Hotel, Hartford, Conn. Society headquarters, 29 West 39th St., N. Y.

Standards Engineers Society—Sixth annual meeting on standardization — economy through application, Sept. 23-25, Hotel Commodore, New York. Society headquarters, P. O. Box 281, Camden, N. J.

Assn. of Iron & Steel Engineers—Annual convention, Sept. 23-26, Penn Sheraton Hotel, Pittsburgh. Society headquarters, 1010 Empire Bldg., Pittsburgh.

American Hot Dip Galvanizers Assn.—Semi-annual meeting, Sept. 26-27, Netherland - Hilton Hotel, Cincinnati. Society headquarters, 1806 First National Bank Bldg., Pittsburgh.

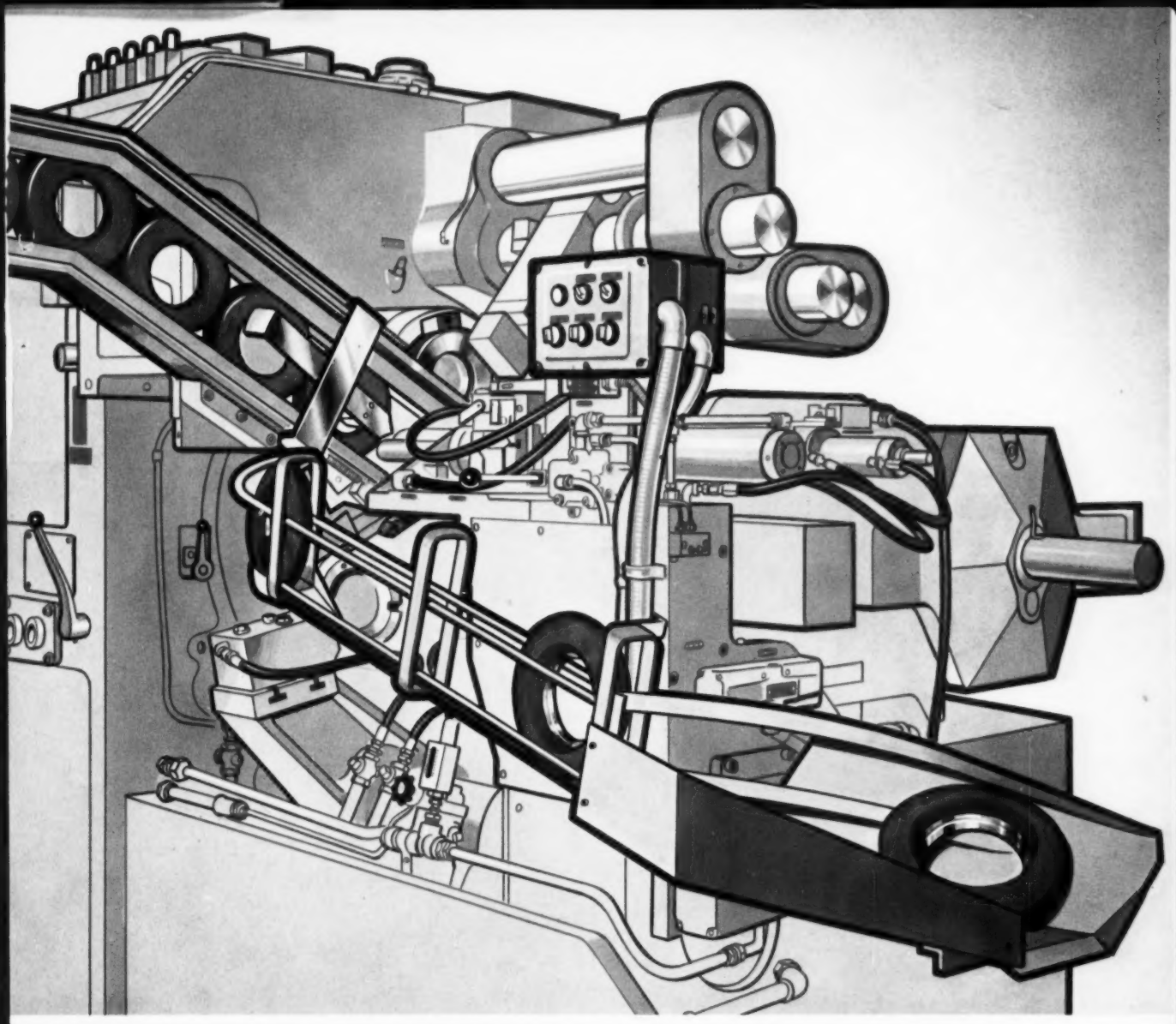
OCTOBER

The Electrochemical Society—Semi-annual meeting, Oct. 6-10, Statler Hotel, Buffalo. Society headquarters, 216 W. 102nd St., New York.

American Institute of Steel Construction — 35th annual meeting, Oct. 6-11, Hotel del Coronado, Calif. Society headquarters, 101 Park Ave., New York.

American Society of Lubrication Engineers—Fourth conference, Oct. 7-9, Royal York Hotel, Toronto, Ont., Canada. Society headquarters, 84 E. Randolph St., Chicago.

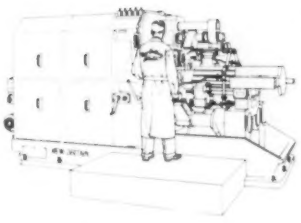
Committee on Vacuum Techniques — Fourth annual symposium on high vacuum technology, Oct. 9-11, Hotel Somerset, Boston. Society headquarters, Box 1282, Boston.



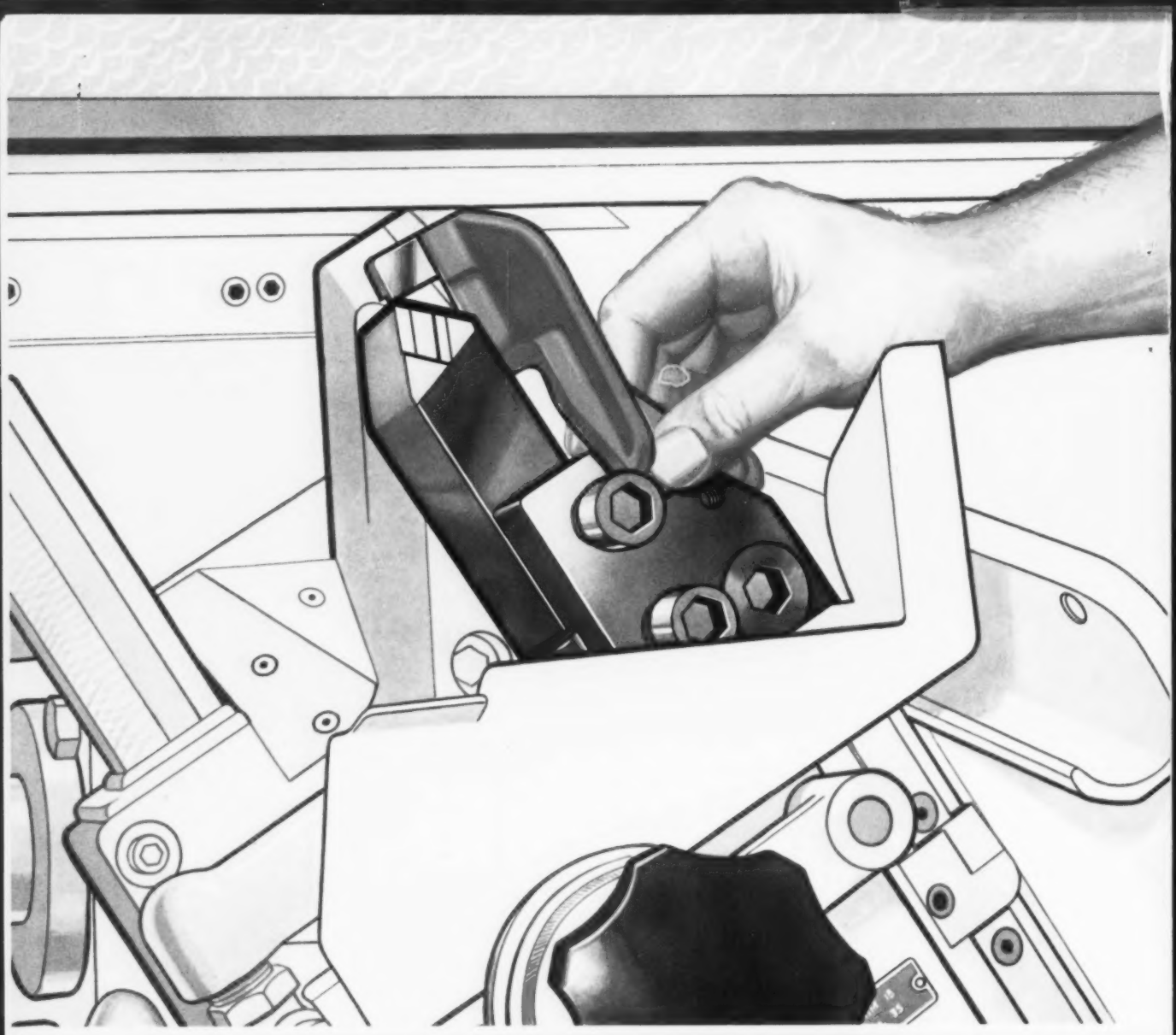
get more chucker work done

with automatic "handling"

New Britain chuckers are the time-tested leaders in their field. Their basic open-end design, an exclusive New Britain feature, makes them unusually well adapted to the automatic handling of pieces. The New Britain Machine Company, New Britain-Gridley Machine Division, New Britain, Connecticut.



Automatic Chucking Machine



1-minute tool change gets more contour work done

It's a fact — you can do more work in a day with a New Britain +GF+ copying lathe and a single-point tool, than with a conventional lathe using half a dozen. Just slip out the worn tool, slip in a new one, gauge it to a single dimension and you're ready to go again. The template repeats the dimensions. The New Britain Machine Company, New Britain-Gridley Machine Division, New Britain, Connecticut.

New Britain +GF+ Copying Lathe

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Highest Quality Foundry Coke Since 1904

Year after year MILWAUKEE SOLVAY COKE ranks as a superior foundry coke because it is made from *carefully selected* coal:

1. LOW IN ASH
2. LOW IN SULPHUR
3. HIGH IN CARBON
4. HIGHLY RESISTANT TO SHATTER AND ABRASION

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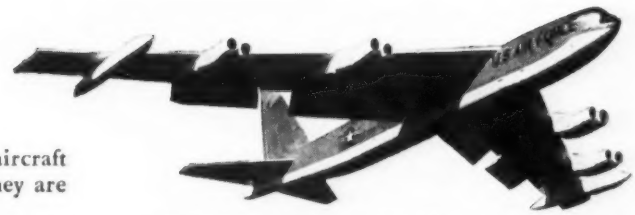
Republic Makes the Steels for Flight

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels



TITANIUM IN THE BOEING B-52 saves 400 pounds in gross weight. Jet engine pods for this history-making, global bomber are fabricated by Bell Aircraft Corporation from titanium supplied by Republic and other producers. Titanium was selected for this application because of its lightness, strength, and corrosion-resistance. It offers the highest strength-to-weight ratio of construction metals. Titanium's extremely high corrosion-resistance makes it attractive for missile applications, such as fuel tanks. Nitric acid has little effect on titanium. It is immune to the corrosive action of salt water and sea air. Write for more facts.

Republic Steel is the world's largest producer of aircraft steels. And include guided missiles in aircraft. They are fast becoming a sizable steel consumer.

Steels furnished to the aircraft industry are as different as night and day. Requirements may individually call for strength, heat-resistance, corrosion-resistance, wear-resistance, high strength-to-weight ratio, ductility—or any combination of these factors.

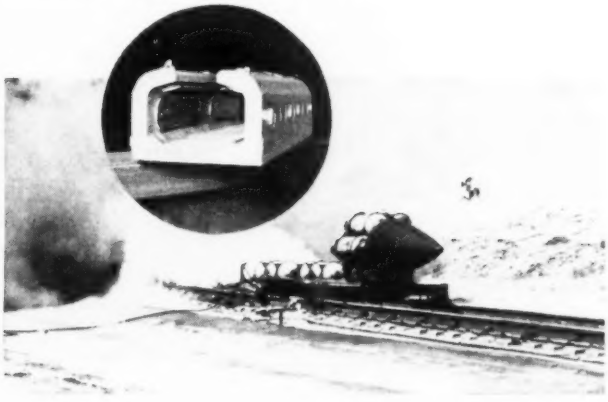
One reason for Republic Steel's prominence in this field is that Republic *makes a wide variety of the steels required.* Another reason is its metallurgical service teams—field, mill and laboratory metallurgists with years of experience gained through helping hundreds of designers and manufacturers solve problems similar to yours.

Now that the sound barrier has been passed and the next goal in sight is the "thermal thicket," material selection becomes even more important. To date two materials, titanium alloys and stainless steel, best qualify to meet high skin temperatures resulting from aerodynamic heat. Republic produces both of these metals in billets, hot rolled and cold finished bars, plates, sheets, and strip.

Republic Alloy Steels have played a prominent part in the development of operating and structural parts free from excess weight, yet tough and strong to withstand shock, impact, strain and vibration.

Our metallurgists and engineers are always available to work with your own personnel in using these Republic products to best advantage. The service is obligation-free and confidential. Send us the coupon if you would like metallurgical assistance.

ALLOY STEEL IN THE NORTH AMERICAN F-100 landing-gear struts provides strength, toughness, maximum resistance to fatigue. The struts are made by Bendix Product Division, Bendix Aviation Corporation. Exacting requirements for inner and outer cylinders resulted in the development of new grade of steel by Bendix and Republic metallurgists working in cooperation with North American engineers. This new steel, designated AMS 6427, was found ideal for application in the strength range of 220,000-240,000 psi. It maintains its great strength at wide temperature extremes. Republic metallurgists are available to help with your projects.



STAINLESS STEEL HELPS SPEED ROCKET SLED to world's record of 1560 miles an hour. The sled, designed and built by Convair Division of General Dynamics Corporation, is used in supersonic tests to evaluate the effect of rain erosion on aircraft and missile parts. The sled rides rails on slippers made of SAE 4130 Alloy Steel. Within each slipper (see photo inset) are stainless steel inserts, Type 321, of which Republic is a supplier. The inserts serve as a lubricant to reduce friction by shucking off metal particles at a temperature of 1500°F. The stainless inserts reduce friction so effectively that engineers no longer take it into account in calculations of sled performance.

STEEL

and Steel Products

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Please have a metallurgist call:
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Send more information on these Republic products:
☐ Titanium ☐ ENDURO® Stainless Steel ☐ Alloy Steel

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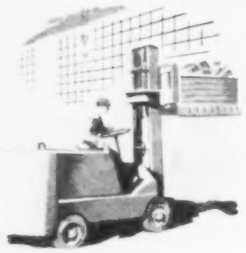
City_____ Zone____ State_____

The world of science behind
EXIDE-IRONCLAD BATTERIES

Being interviewed is Curtice C. White, Senior Development Engineer.

"These channels actually cool the battery"

At the Exide Laboratories—**Reporter:** First, Mr. White, tell me what makes a battery hot.



White: Heavy loads—they often raise battery temperature as much as 20 degrees.

Reporter: How do the channels cool it?

White: The heated electrolyte rises to the top through the channels. Plates are cooled by electrolyte coming up from the bottom.

Reporter: Don't all batteries have channels?

White: Unfortunately, no. It is the tubular construction of the Exide-Ironclad positive plate that leaves these channels on both sides.

Reporter: What does this feature mean in battery performance?

White: Longer battery life, for one thing. The battery stays cooler. Has less incidence of hot spots. Plates operate at a more uniform temperature.

Reporter: Obviously this is an important feature of Exide-Ironclad.

White: Yes it is, but it's just one of many engineering details that contribute to its high capacity and long life.

Note to battery users: Whenever you order heavy duty batteries or the equipment that requires them, be sure to specify Exide-Ironclad. For detailed bulletin, write Exide Industrial Division, The Electric Storage Battery Co., Philadelphia 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY **Exide**®

specialized, stylized, modernized for automotive and appliance industries

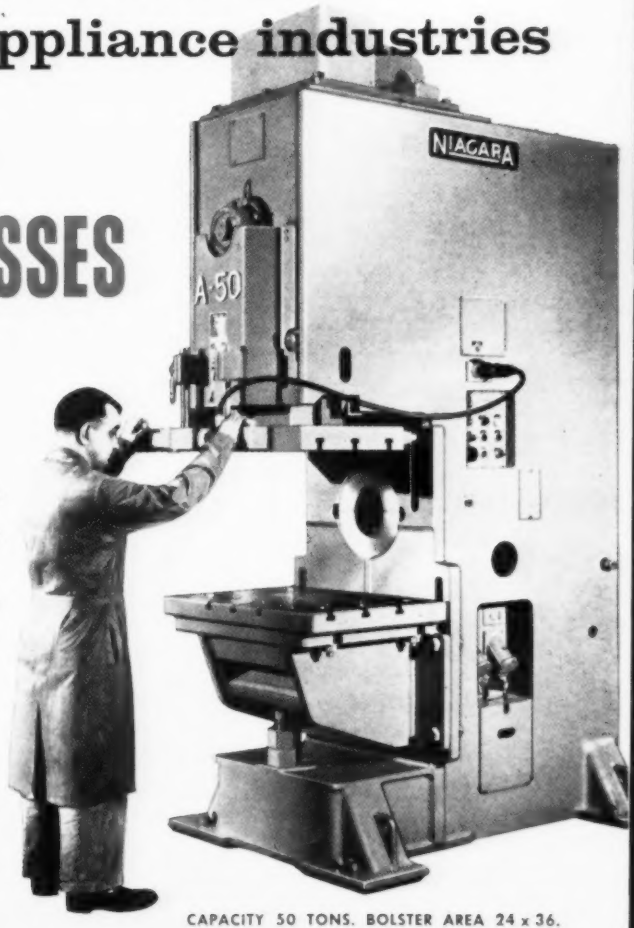
THE LATEST WORD IN ADJUSTABLE BED PRESSES

Trim, compact and versatile — this is Niagara's brand new version of its Adjustable Bed Press for the mass production industries. Designed for secondary operations between automated presses in the production line, it embodies specialized features for automotive and appliance manufacturers.

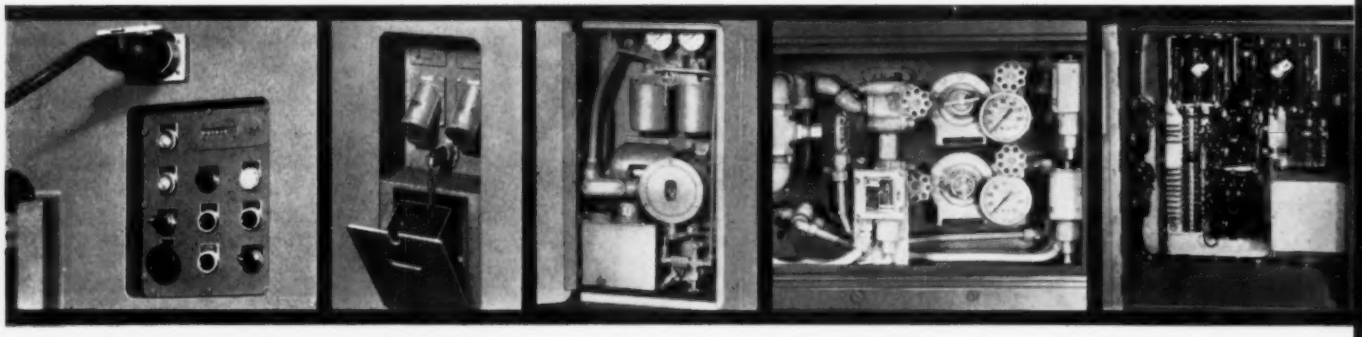
Everything about this press is geared to promote faster, safer and more efficient operation . . . the smooth streamlined exterior of its modern front-to-back crankshaft design . . . absence of overhanging and protruding parts . . . complete drive (gears, flywheel, air friction clutch and brake) fully enclosed within frame . . . up-to-the-minute controls and devices neatly recessed in the frame or completely housed behind flush panel doors.

Examine it. No press in this category can match such a combination of design and operating features . . . such space-saving compactness. It's easily moved too! With lifting lug and skid type feet, you can readily hoist or pull this press to any location within your plant.

WRITE TODAY for full details on this new model, as well as the complete standard line of Niagara Adjustable Bed Presses . . . (14 to 150 ton capacities). Request new Supplement and Bulletin 60E.



CAPACITY 50 TONS. BOLSTER AREA 24 x 36.



OPERATOR'S PANEL features deluxe controls conveniently arranged for fingertip direction of press operations.

AUX. POWER SUPPLY & SAFETY BLOCK. Receptacles (440V. and 110V.) for automatic equipment, conveyors, portable tools, etc. Safety plug, chained to safety block, de-energizes entire press control when removed from receptacle.

AUTOMATIC OIL CIRCULATING SYSTEM sends clean, filtered, metered flow of oil to all bearings and gears in crown, air counterbalance, slide gibs and barrel adjustment. Correct operating oil pressure is maintained, or press stops automatically.

AIR CONTROL PANEL houses air line filter, pressure regulators, gauges, blow-off valves for clutch and counterbalance, flywheel brake and motor cutout switch behind dust-tight door.

COMB. MOTOR & PRESS CONTROL in dust-tight enclosure flush mounted in rear frame, houses disconnect switches, circuit protection, transformers, fuses, control relays and starters for main motor and lubrication pump.

NIAGARA

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America's most complete line of presses, press brakes, shears, other machines and tools for plate and sheet metal work.

YOUNGSTOWN QUALITY PAVES THE WAY

Producers of Quality Carbon and Alloy Steels for over Half-a-Century

The Motor Grader and Tractor-Scraper—shown working on the site of Houston's multi-million-dollar "Shopping City of Gulfgate", are designed for rugged service requiring tough strong steel construction.

Caterpillar Tractor Co. uses Youngstown quality steels in the construction of these powerful machines. Youngstown Alloy Steel for the gears of the steering and driving mechanisms help to provide durable, trouble free mechanical operations. Yoloy "M" Steel Plates, one of the Yoloy family of high strength steels, are used for structural strength, resistance to shock and abrasion and also for ease in forming and welding the many intricate parts in this type of fabrication.

Youngstown's Alloy and Yoloy Steels are produced in a variety of forms and qualities to meet your particular specifications. Our Service Engineers are available upon request to discuss your Alloy and High Strength steel problems—why not call them today.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

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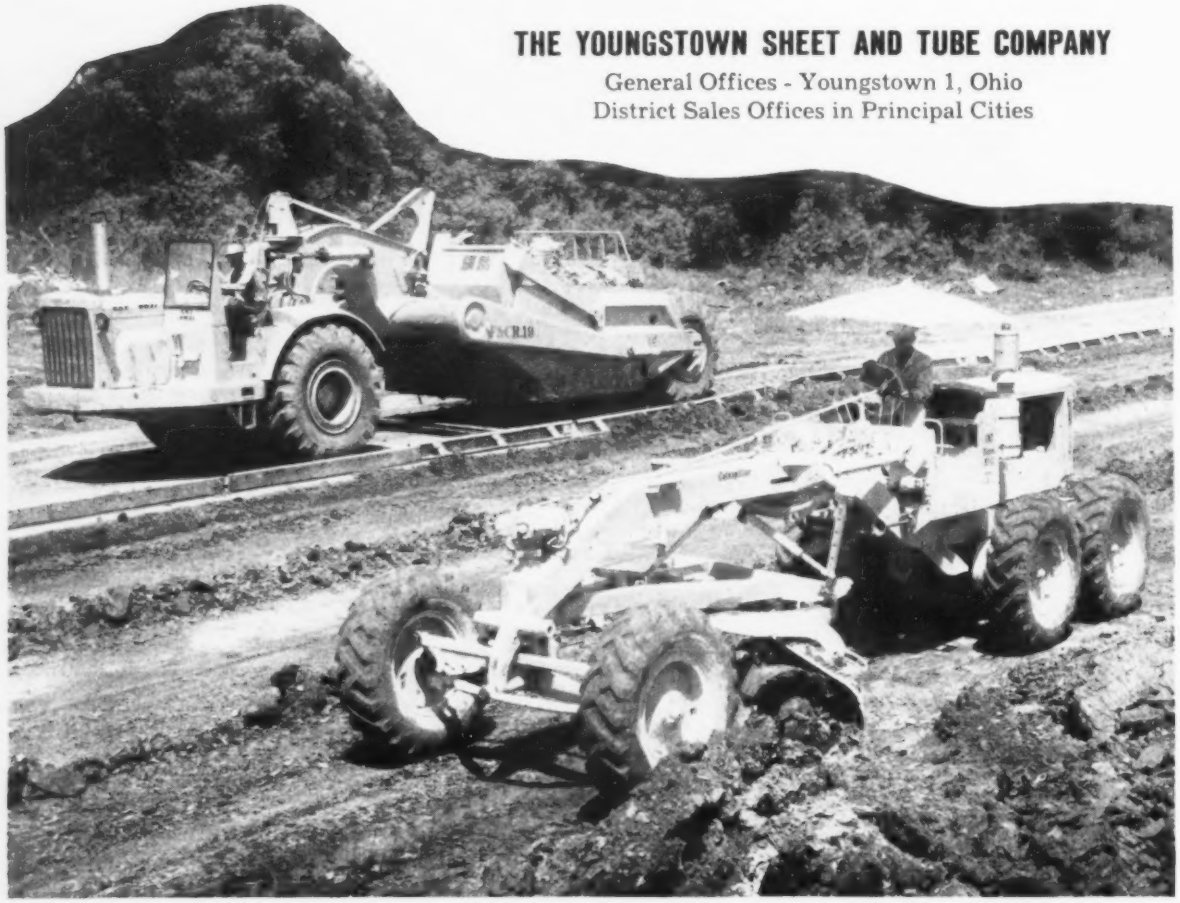

"Excellent hoisting qualities... a wonderful machine"

reports R. Litz & Sons Co., Ltd.

Back in December, 1955, R. Litz & Sons Co., Ltd., of Winnipeg, Canada, bought a Lima Type 44 Crane to do the heavy lifting in its building and machinery moving business. Gordon Litz says: "We have found the hoisting qualities of this machine to be excellent. It is also superb for deep trenching when equipped as a pullshovel; we are pleased to express our opinion of the excellent qualities found in our Lima machine."

You will find satisfied owners wherever Limas are found, around the world. For materials handling, excavating or whatever the job, contractors who want speed, reliability and extra capacity all say the same thing. Here are some of the specific reasons why Limas lead the field:

1. *Piston-ring-type dirt seals and retainers in the crawler rollers.*
2. *Moving parts are flame or induction hardened for longer life.*
3. *Main machinery is placed well behind the center of rotation.*
4. *Anti-friction bearings at all important bearing points.*
5. *Big capacity drums and sheaves—easy on cables.*
6. *Propel and swing gears and power take-off are enclosed in a sealed oil bath.*
7. *Torque converter optional on certain types.*
8. *Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts.*

If you want the *best* in shovels, cranes or draglines working for you, it will pay to check the complete line of wagon, truck and crawler-mounted Limas . . . designed and built to give you stamina and long profitable operation on every job. See your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA SHOVELS · CRANES DRAGLINES · PULLSHOVELS

BALDWIN BLH LIMA-HAMILTON

BALDWIN-LIMA-HAMILTON
Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation
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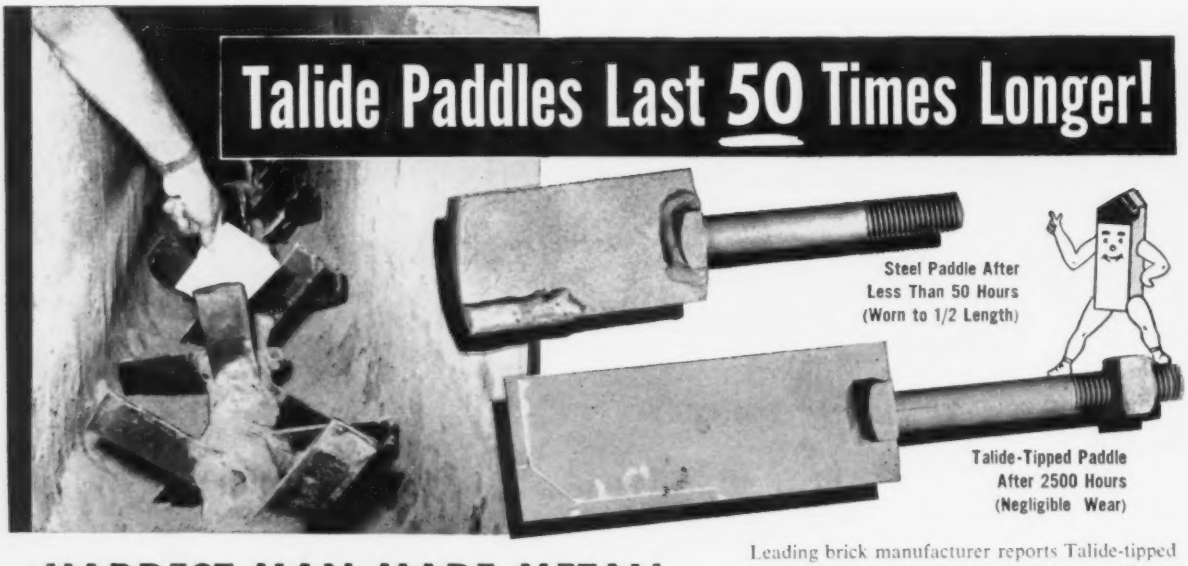
Talide Paddles Last 50 Times Longer!



HARDEST MAN-MADE METAL!

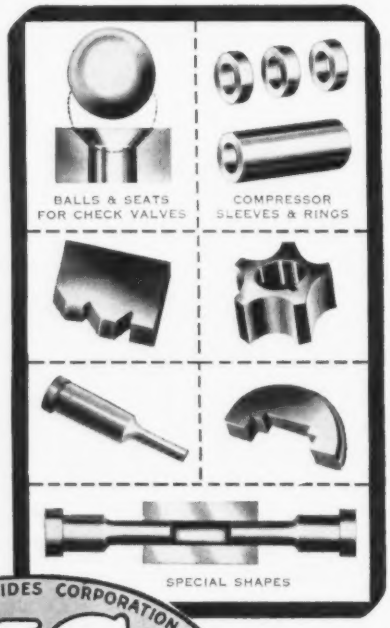
TALIDE METAL, a tungsten carbide of superior quality, is harder, stronger, and more resistant to abrasion than any other metal. Properly applied, it gives superior service on applications where wear, heat, strain, and shock are destructive to other metals.

- **ABRASION RESISTANCE**— Up to 100 times that of steel.
- **COMPRESSIVE STRENGTH**— Higher than all melted, cast or forged metals and alloys.
- **RESISTANCE TO DEFORMATION**— 2 to 3 times greater than steel.
- **HEAT RESISTANCE**— Resists oxidation and thermal shock up to 1500° F.
- **THERMAL EXPANSION**— Less than half the rate of steel, "creep" is negligible.
- **FRICTIONAL RESISTANCE**— Lower than steel, non-galling, "slippery" properties higher.

ALL TALIDE METAL grades are made in latest type vacuum electric furnaces by precision methods under rigid control. A wide variety of shapes and sizes can be supplied—up to 25" in diameter, 100" in length, and 5000 pounds by weight. Parts can be supplied to any grit finish required down to one micro-inch. The physical properties of the most commonly used grades are listed below. Other grades are available for specialized applications.

Leading brick manufacturer reports Talide-tipped pug mill paddles have outlasted 50 sets of hard-faced steel paddles to date—and are still in use. Operation involves mixing abrasive ceramic, clay and brick compositions.

TALIDE METAL is saving industry millions of dollars annually by wear-proofing vital parts on machine tools, presses, pumps, compressors and other types of processing equipment used in the steel, oil, chemical, plastic, auto, rubber, textile, glass, ceramic, mining and metalworking industry.



PHYSICAL PROPERTIES OF TALIDE METAL (P. S. I.)

Application	Operation	Talide Grade	Rockwell "A" Hardness	Specific Gravity (Density)	Transverse Rupture Strength	Compressive Strength	Co-Efficient of Thermal Expansion	Modulus of Elasticity (Deflection)
WEAR SURFACE	No Shock	C-91	91.8	14.90	235,000	710,000	3.00x10-6	91,000,000
	Light Shock	C-99	91.0	14.75	265,000	670,000	3.65x10-6	84,000,000
	Medium Shock	C-88	89.5	14.55	295,000	635,000	4.00x10-6	80,000,000
IMPACT	Light	C-85	88.4	14.25	315,000	600,000	3.75x10-6	77,000,000
	Medium	C-80	87.0	13.85	335,000	550,000	4.50x10-6	74,000,000
	Heavy	C-75	85.0	13.15	355,000	500,000	5.00x10-6	70,000,000

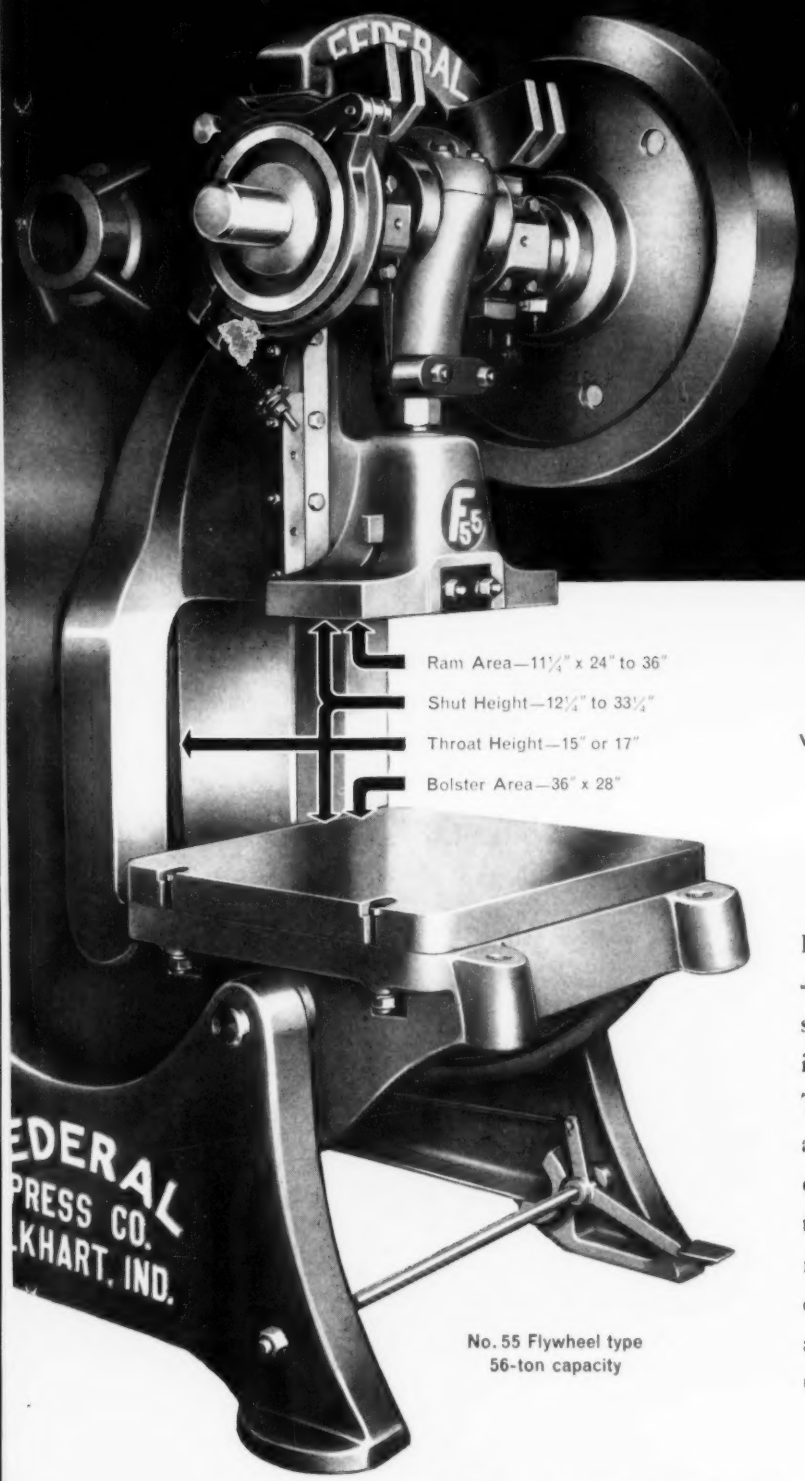
Note: Hardness values may vary plus or minus .2 to .3 on individual lots.

Send for new 76-page catalog 56-G or ask for sales engineer to call.

Metal Carbides Corporation
Youngstown 12, Ohio

METAL CARBIDES CORPORATION
MC
TALIDE®
YOUNGSTOWN 12, OHIO
HOT PRESSED AND SINTERED CARBIDES • VACUUM METALS
HEAVY METAL • ALUMINUM OXIDE • HI-TEMP. ALLOYS
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

Introducing the new FEDERAL "55" for



JOBS... BIG and BULKY

Ram Area—11¼" x 24" to 36"
Shut Height—12¼" to 33¼"
Throat Height—15" or 17"
Bolster Area—36" x 28"

No. 55 Flywheel type
56-ton capacity

Featuring oversize dimensions, the Federal "55" handles work formerly confined to larger, more costly equipment

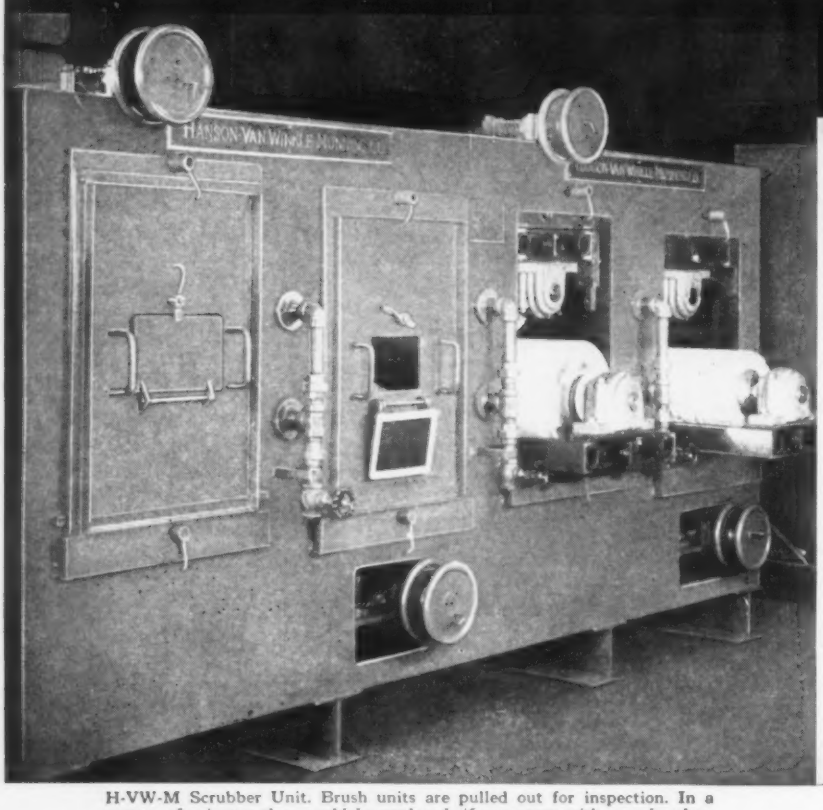
Here is a press born to handle bulky jobs —laminations, die-cast trimming, progressive die work and the like. Check its important dimensions and you'll see why. This rugged, precision-built FEDERAL is a great press for other reasons, too. It embodies the many *extra quality* features that have made FEDERAL PRESSES famous the world over. Available in geared or flywheel models, with mechanical or air clutch. WRITE NOW FOR NEW CATALOG showing complete line.

Federal Press Company, 702 Division Street, Elkhart, Indiana

FEDERAL *Open back Inclinable* PRESSES

32 Years of Quality Construction

CONTINUOUS STRIP AND SHEET METAL PROCESSORS



cut cleaning time to a fraction with this automatic H-VW-M SCRUBBER UNIT

H-VW-M Scrubber Unit. Brush units are pulled out for inspection. In a matter of minutes they could be replaced, if necessary with new brushes.

...and no down time either! Brushes are replaced easily while unit is in operation!

H-VW-M Scrubber Units—which adapt to fit into any system—are equipped with an exclusive, patented device that permits replacement of brushes *while the unit is running.* Just turn a few bolts, slide worn brush out, and insert replacement. Not a moment's production time is lost!

Add the advantages of this remarkable new feature to the enormous savings you'll realize in cleaning, reworking and inspection time, and you'll see why the rugged, efficient H-VW-M Scrubber Unit has no equal. 3149

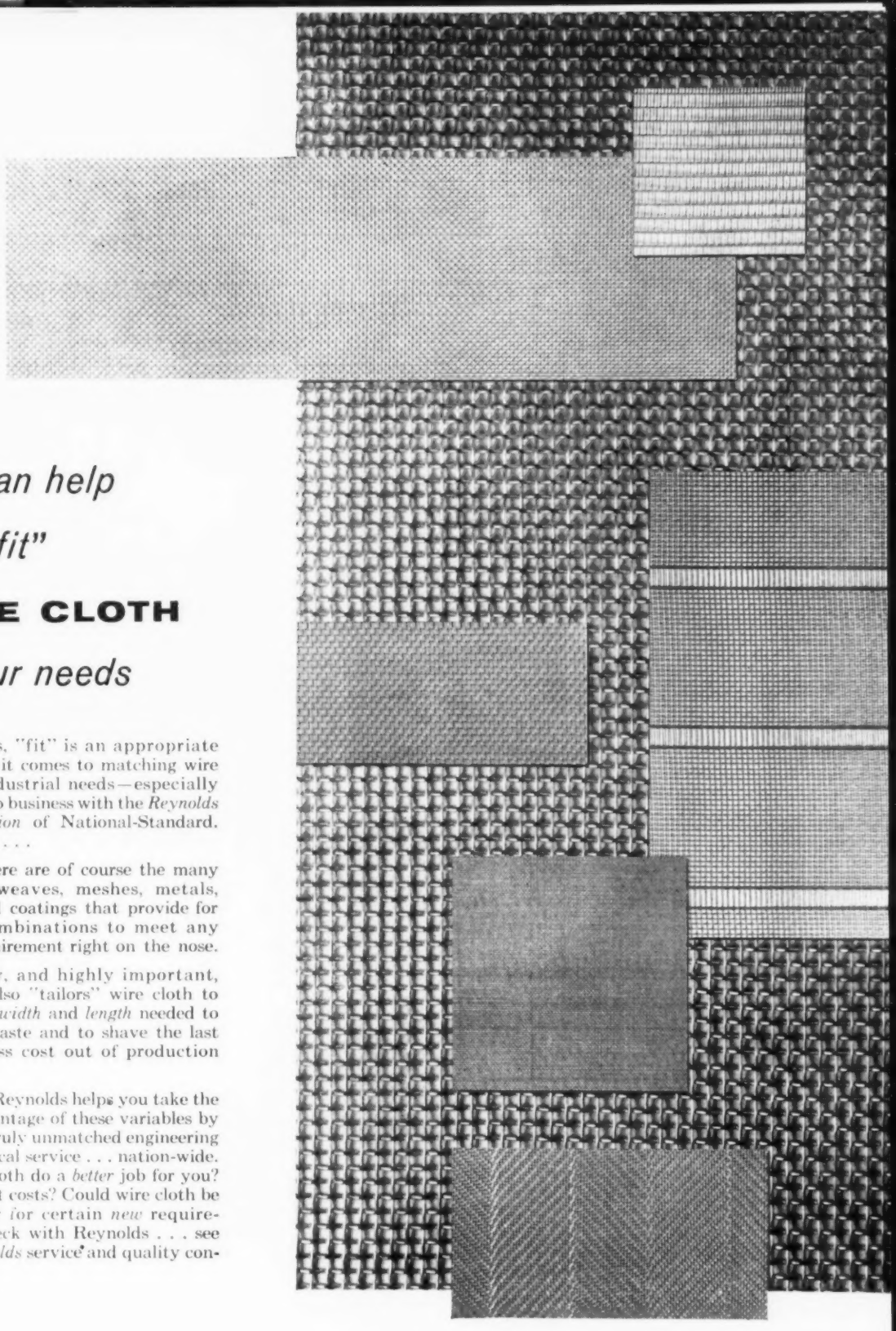
Get more facts about H-VW-M Scrubbers, with their exclusive easy-brush-replacement feature, by writing today for Bulletin HB-100.

Hanson-Van Winkle-Munning Co., Matawan, New Jersey. Offices in principal cities.

H-VW-M

PLATEMANSHIP —Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

Hanson-Van Winkle-Munning Company, Matawan, New Jersey. Offices in principal cities.



We can help

you "fit"

WIRE CLOTH

to your needs

These days, "fit" is an appropriate word when it comes to matching wire cloth to industrial needs—especially when you do business with the *Reynolds Wire Division* of National-Standard. Here's why . . .

First, there are of course the many different weaves, meshes, metals, finishes and coatings that provide for infinite combinations to meet any special requirement right on the nose.

Secondly, and highly important, Reynolds also "tailors" wire cloth to the precise *width* and *length* needed to minimize waste and to shave the last bit of excess cost out of production operations.

Finally, Reynolds helps you take the fullest advantage of these variables by providing truly unmatched engineering and analytical service . . . nation-wide. Can wire cloth do a *better* job for you? Can you cut costs? Could wire cloth be the answer for certain *new* requirements? Check with Reynolds . . . see what *Reynolds* service and quality control offers!

NATIONAL NS NATIONAL-STANDARD Company **STANDARD**

DIVISIONS: NATIONAL-STANDARD, Niles, Mich., fine wire, stainless, music spring and plated wires • WORCESTER WIRE WORKS, Worcester, Mass., music spring, stainless and plated wires, high and low carbon specialties • WAGNER LITHO MACHINERY, Secaucus, N. J., metal decorating equipment • ATHENIA STEEL, Clifton, N. J., flat, high carbon spring steels • REYNOLDS WIRE, Dixon, Ill., industrial wire cloth

Only New HALLOWELL *ERECTOMATIC*® Steel Shelving

cuts assembly time, permits fast repositioning of shelves —gives you these plus features

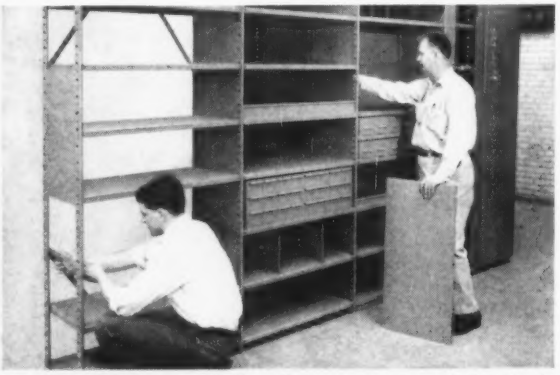
STRAIGHT-IN, STRAIGHT-OUT SHELF CHANGE. No tilting. No dismantling. No interference with any other shelf.

No matter what type of shelving you need—open, closed, bin units, ledge units, counters or cabinets—new Hallowell ERECTOMATIC* steel shelving makes the job easy. The unique built-in locking device*—developed by SPS—speeds assembly and rearrangement of shelves. To position a shelf, slide it into place on the shelf supports, press the locks, and the shelf is locked. To reposition a shelf, release the locks, pull the shelf straight out, slide it straight in on its supports at the new location, and press the locks. It takes only seconds to do the complete job. Made of prime steel, phosphate coated, and finished in SPS green baked-on enamel—other colors are available. Hallowell ERECTOMATIC steel shelving is stocked by leading industrial distributors and shop equipment dealers. For complete information, see the one nearest you. Or write Hallowell Shop Equipment Division, STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

*Patent applied for

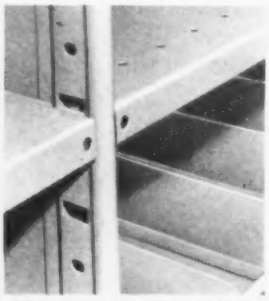
INDEPENDENT SHELF POSITIONING. Each shelf can be repositioned individually in seconds.

FULL USE OF SHELF AREA. No tees or angles, and beaded posts save valuable space.



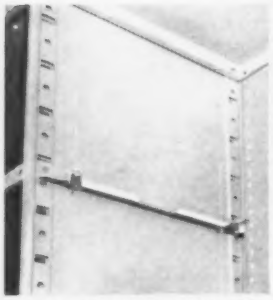
TWO MEN ASSEMBLED new Hallowell ERECTOMATIC steel shelving in just over 10 minutes. Closed unit was 36 in. wide, 18 in. deep, 7 ft. 3 in. high, complete with seven shelves. Standard models of other design required 13-55 min. Table shows test results.

COMMON SIDE PANELS AND POSTS save material between adjacent units in a rack. Back and side panels are one-piece.



BEADED POSTS AND FLANGED SHELVES prevent snagging of clothing or stored goods, protect workers.

Brand	Time to Assemble (Min.)	Units Per Hour
Erectomatic	10.42	5.75
A	13.23	4.53
B	14.24	4.21
C	16.30	3.68
D	18.12	3.31
E	25.03	2.40
F	55.03	1.09



FULL DEPTH SHELF SUPPORT. No buckling possible. Reinforcements can be added when required.

4 CLASSES OF SHELVES. Regular, medium, heavy and extra-heavy construction meets all load requirements.

HALLOWELL® SHOP EQUIPMENT DIVISION

STANDARD PRESSED STEEL CO.

SPS

JENKINTOWN PENNSYLVANIA

You get what you want with

DANLY

PRESSES

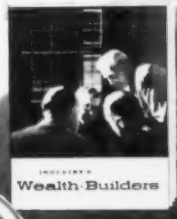
WORKS MANAGERS

get presses that work a full shift... every shift

Danly Presses are made to operate full time at top capacity... built with extra strength and extra rigidity. Oil circulates automatically to critical wear points all the time the press is running. Heavy bed bracing and extremely close gib alignment mean less die wear, longer runs without die regrinding. Danly accuracy and the exclusive Micro-inching Drive reduce hours to minutes during die try-out. Danly Presses can be installed and ready to go to work weeks sooner—pipes, wires and controls are integral with the press.

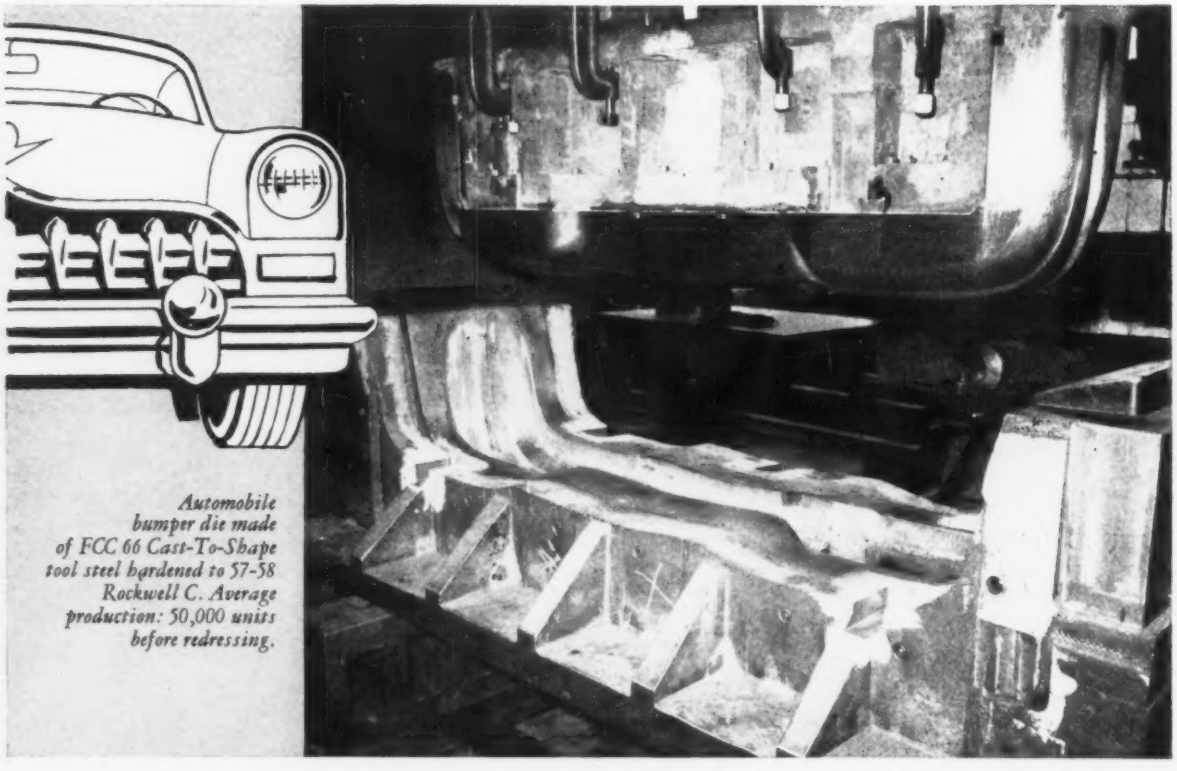
NEW BOOK TELLS HOW MODERN PRESSES MAKE LARGER PROFITS POSSIBLE

"Industry's Wealth-Builders" tells how Danly Presses play an important role in corporate profits... growth... new plant development... lower production costs. For your copy, write to DANLY MACHINE SPECIALTIES, INC., 2100 S. Laramie Avenue, Chicago 50, Illinois.



DANLY

Try this money-saving method that auto-makers use



Automobile bumper die made of FCC 66 Cast-To-Shape tool steel hardened to 57-58 Rockwell C. Average production: 50,000 units before redressing.

A-L CAST-TO-SHAPE TOOL STEELS

SEND FOR THIS NEW CATALOG
"FORGING AND CASTING PRODUCTS"

Contains the latest information on FCC Air Hardening, Oil Hardening and other Cast-To-Shape Tool Steel Specialties that can save you time and money . . . also Composite Die Sections and Smooth Hammered Forgings in a wide range of tool and stainless steels. *Don't wait—get your copy NOW.*

Write Today

ADDRESS DEPT. A-91

Auto makers, too, are included in the long list of manufacturers enjoying the advantages and economies of A-L Cast-To-Shape tool steels. By this modern, money-saving method of tool and die making, it is possible to cast even intricate shapes to within an eighth of an inch of finished size. The savings in time and material over that of machining from solid stock are readily apparent.

A-L Cast-To-Shape tool steels are offered in a variety of grades, and are electrically melted to precise laboratory standards. They are remarkably resistant to abrasion and possess great compressive strength. In many cases, they out-perform tools and dies made from solid bars and forgings.

Remember, with A-L Cast-To-Shape tool steels, you buy less steel originally, and you have less machining to do for finish. Ask your A-L representative about them TODAY . . . or write *Allegheny Ludlum Steel Corporation, Forging and Casting Division, Wanda and Jarvis Avenues, Detroit 20, Michigan.*

For complete MODERN Tooling, call

Allegheny Ludlum

AL® FINE TOOL STEELS SINCE 1854

WSW 6078

Penn-Dixie's 20-ton Plymouth Locomotive transports stone and fullers earth from quarry to crusher 8 hours a day, 5 days a week.

"Fuel savings alone amount to over $2600 a year"

Here's real economy in haulage operations: "We like our Plymouth very much . . . it is definitely faster, more efficient than the steam locomotive we used formerly," states B. B. Nall, superintendent of Penn-Dixie Cement Corp., Clinchfield, Georgia, in describing the performance of the company's 20-ton Plymouth Diesel with Torqomotive Drive.

"Over a ¾-mile route from quarry to crusher, our Plymouth Diesel saves us more than $10-per-day in fuel costs alone. Maintenance costs have been exceptionally low with a minimum of down-time in more than three years of continuous operation."

Plymouth's high operating efficiency and low operating cost make hauling, switching and spotting jobs more profitable for large and small companies everywhere. Whether your requirements call for gasoline or Diesel power, mechanical or torque-converter drive, we will gladly send you complete information on a Plymouth built specifically to meet your haulage needs. Send a brief outline of *your operations* to: The Fate-Root-Heath Company, Dept. A-2, Plymouth, Ohio.

PLYMOUTH® LOCOMOTIVES

WITH TORQOMOTIVE DRIVE

RAIL POWER

PLYMOUTH LOCOMOTIVES in Progressive Industry throughout the world

No Excessive Heating

New Rectifier Cooling System Prevents Heat Build-up and Damage

when ac Power Fails

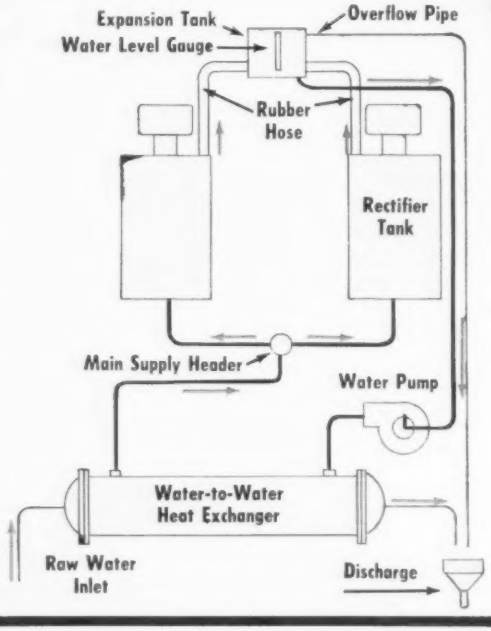
A SAFER, more effective cooling system in the Allis-Chalmers rectifier continues to circulate water *even when an ac power failure stops the water pump.* Heat and steam are dissipated before they can develop to the danger point.

The new system features an expansion tank that extends the full length of the rectifier frame with short vertical connections from each tube. With warm water continuing to flow freely upward, a thermo-siphoning action draws cooler water into the tubes. Build-up of excessive temperatures is prevented. Steam pockets are kept from forming. Subsequent water loss from the recirculating cooling system is minimized.

Successful operation in hundreds of installations is your assurance of the complete reliability of Allis-Chalmers mercury arc rectifiers. Contact your nearby A-C office or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wis.

How the System Works

Water is normally pumped through the water-to-water heat exchanger to the main supply header from where it circulates through rectifier tubes picking up heat. Hot water flows up through the short connections to expansion tank and back down to suction side of water pump.



ALLIS-CHALMERS
Mercury Arc Rectifiers

Factory-packaged units cut installation time and costs. Sealed tube rectifiers are supplied in completely enclosed or open types. Here is a typical, completely enclosed, 1000-kw, 250-volt rectifier for steel mill service.

ALLIS-CHALMERS

A-5425

Too Much Ado About Heat?

Light metal proponents think some of the talk about "thermal barriers" in aircraft and missile design may be misleading. Only certain parts will have to withstand maximum heat, they say, and these will have to be heavy, of course. But a wide variety of non-critical components will never have to stand up to the full effect of these high temperatures, it's claimed. For these parts, light alloys are suggested as a way to offset the penalties imposed by the use of heavier, heat-critical materials.

Vacations Slow Production

Longer vacations are making summer production slowdowns more noticeable. Many firms now give three weeks off to workers with more than 15 years service. In the steel industry, 37 pct of the labor force falls in the 15-year-and-over group. Another 18 pct may grow into this bracket in the next five years. And workers today are taking extra vacation time rather than extra pay when there is an option.

Analyze Alloys In Seconds

Routine analysis of alloys is said to average about 90 seconds with a new direct-reading spectrograph. The instrument needs no photographic plates, will analyze trace elements in amounts as low as 0.003 pct, and is claimed to work within a standard deviation of ± 1 pct. Operation can be either automatic or manual. Changeover from automatic analysis of one alloy type to another takes less than 5 minutes.

Pipeline Over Mountains

Solid material is carried over mountainous country by the first pipeline of its kind ever built. A mixture of crushed ore and water is piped 72 miles from a mine site in Utah to a refinery in Colorado where it is converted into coke and gasoline.

Atom Carriers Save Money

Dollar savings of the forthcoming atomic-powered aircraft carrier have been charted by the Navy. Figures show spending could be cut $31 million in the first two years the new ship sails. Sum includes: $5 million for the oil it won't burn; $23 million for the tanker it won't need; $3 million for the tanker's fuel and crew pay. Annual savings estimated after the first two years run to nearly $3 million.

Supersonic Transports Next

Soon to appear on the commercial plane horizon are supersonic jet transports. At least two companies have sketches for planes that will cruise at about 1200 mph, roughly twice the speed of the jet planes now being readied for travelers. Advent of these swifter planes will intensify the need for airport modernization.

Appliance Makers Perk Up

Appliance production in the second half may be better than was expected. Reports of top-heavy dealer inventories may have been overrated. A strong late-selling season has developed for several important producers. Production schedules on air conditioners are being fattened, and one major appliance maker is stepping up its July production quota on refrigerators, also.

Control All Pension Plans

Businessmen don't want Congress to legislate anything requiring disclosure and control of purely company programs for pensions or health and welfare benefits. It's a vain hope. Whatever Congress does will involve such plans along with union-sponsored or jointly administered projects. Unions say that 92 pct of health and welfare plans and over 80 pct of all pension plans are company operated, and must be regulated along with the others.

Steel Imports Will Taper

Look for steel imports to taper off in coming months. First quarter imports were up more than 150,000 tons over the same period in 1956. Plates, structurals and pipe showed the biggest gains. But prices of imports are dropping now, indicating eased demand. Steelmen predict these prices will drop under domestic figures and that imports for the year will total about 1.3 million tons.

ANNOUNCING!

Increased capacity ratings for Timken® bearings

THE Timken Roller Bearing Company announces an increase in the capacity ratings of most series of Timken® tapered roller bearings. Increases range up to 39%. Most are in the neighborhood of 10%. Some are negligible.

Permits Use of Smaller Bearings

This increase in capacity ratings makes it possible for many of you to use smaller bearings. Your products can be made more compact. You can save weight. You may be able to reduce the size of your shafts and housings. And you may be able to use Timken bearings in new applications where they have not been practicable in the past.

3 Reasons for Increases

What led to these increases in Timken bearing capacities? Three things:

First, a careful review of more than 6,000 different laboratory studies of Timken bearing performance on fatigue life machines. From these exhaustive studies, conducted on an organized, scientific basis since 1924, we keep learning more and more about predicting bearing life.

Second, refinement in the method of analyzing these studies mathematically.

Third, a careful review of the life of millions of Timken bearings in the field.

How Much Can This Save *You?*

To find out how the new capacity ratings affect the types and sizes of Timken bearings in which you are interested, call your Timken bearing representative or write our Engineering Department. We'll be glad to work with you at the drawing board stage. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN® TRADE-MARK REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

SPECIAL REPORT

Success In Business Takes More Than Urge To Get Ahead

By Benjamin F. Fairless—President, American Iron and Steel Institute.

Real success recognizes obligation to society and American system of free enterprise.

Understanding people and keeping finger on the public pulse also are important.

▪ When the editors of THE IRON AGE asked me to prepare an article of the kind I hope this turns out to be—an article on some principles and rules in business success—I had to tell them not to expect me to come up with a sure-fire "Do-It-Yourself Success Kit." If I could put together one of those, I would take out a patent, go into production and take to the road selling them myself.

But what I can do is set forth some of the qualities I have observed in the men I have counted as outstanding successes in business and industry.

A Common Denominator—During almost 45 years in the steel industry, it has been my good fortune to know a good many successful men. They are men in big enterprises and small ones who succeeded in every task assigned them, who got a great deal of enjoyment from their work every day, who helped others to succeed and enjoy their work and who, above all, could rightly feel that they had been of some service to their fellowmen.

In observing men whom I think could be considered successful by any standard of measurement, I noticed that all of them possessed, in heaping measure, at least some of the same qualities. Those qualities were like a common denominator.

That Extra Something—One of those qualities is dedication—dedication to the job at hand, and to something beyond the immediate task. Every one of the men I have looked upon as truly successful regarded every job he ever held as

GREETINGS: Ben Fairless, then chairman of U. S. Steel Corp., chats with stockholder at annual meeting of company shareholders.

DEEP THOUGHT: Mr. Fairless concentrates on problem at gathering of U. S. Steel Corp. executives.

something more than a way of making a living. All of those men brought to their jobs more than mere ability, ample though that was in every case.

They brought, also, unmistakable strength of character; they brought enthusiasm for the individual enterprises they were engaged in, and enthusiasm for the American system of enterprise, as the system that has been kinder to more people than any other in human history. Moreover, they did everything in their power to help protect and improve that system.

Delegate Wisely—Next, all of the men who are down in my book as all-around successes have had exceptional capacity to delegate responsibility wisely—and to delegate the authority needed to carry out any given responsibility.

The successful man, the one who is able to take on a heavier and heavier load of the final responsibility for getting things done, understands, of course, the elementary rule that delegation of his responsibilities does not relieve him of personal accountability for results.

Understand People—To delegate wisely means, of course, that the persons to whom the authority for carrying out a responsibility is given, must be wisely chosen. Deciding what people to select for which responsibilities — that is, choosing the right man for the right job—is, I think, the most important form of decision the executive has to make. That, in turn, means that the successful man in the management of business or industry must understand people, must know what encourages them to give their best; and in order to understand people, you have got to have a genuine liking for them.

I would like to make one observation about the men I have known who developed an uncommon ability to delegate responsibility and authority. In every case I can think of they are men who, early in their careers, when they were in modest staff jobs, showed an uncommon ability to accept responsibility.

Be Decisive—This was not intended to be a "Three D" production when it started out, but it so happens that a third quality, along with dedication and delegation, that truly successful men seem to have in common is decisiveness.

When I speak of decisiveness, or the capacity to make firm decisions, I want to make it clear that I am not referring to snap judgments or to conclusions by hunch. The quality I mean is that of arriving at clear-cut decisions, without a lot of delay, on the basis of all the facts obtainable from those around you who are best able to supply those facts.

Talk It Over—It has been my practice, when I had important executive decisions to make, not to reach a final conclusion until after I had discussed the matter with my key people.

Usually, after talking a matter out with the key people involved, it is possible to make a decision then and there. But there are occasions, when a particularly important

and complex problem is under consideration, that call into play a simple rule I have often expressed in these words: "Let's sleep over the matter." That doesn't mean stalling and procrastinating; it means just what I said—permitting the decision to go over until the next day.

It Takes Courage—Our country has grown great in so many ways through courage, enterprise and decisive good judgment on the part of many, many individuals working co-operatively in our democratic political, economic, and social institutions. It has always seemed to me, therefore, that timidity, inaction and indecision are hobbles on our collective progress, as well as hobbles on the advancement of the person.

In a discussion such as this one, there is a point that must not be overlooked. I feel quite strongly that an important factor in business success is good health. With few, if any, exceptions, the successful men I have known have had great stamina, which comes from a combination of a fortunate heritage and the good sense to protect their health.

The Big Picture—Earlier in this article I referred to the quality of being dedicated to one's task and to the system that has permitted individual initiative to flourish with better results for all concerned than anywhere else on earth. That is a broad sort of dedication.

There is a great difference between the dedicated man and the man who is merely preoccupied with his own job. The latter often gets so involved in his specific task that he fails to see how the work of others relates to his own.

Take Public Pulse—If you lose touch with outside affairs, you may fail to detect, before the competition does, changes in public sentiment, in the people's needs and tastes, and changes in political or economic circumstances that may affect your business. You had better be alert to detecting such changes — or, better yet, foresee them if possible—and get ready to meet them.

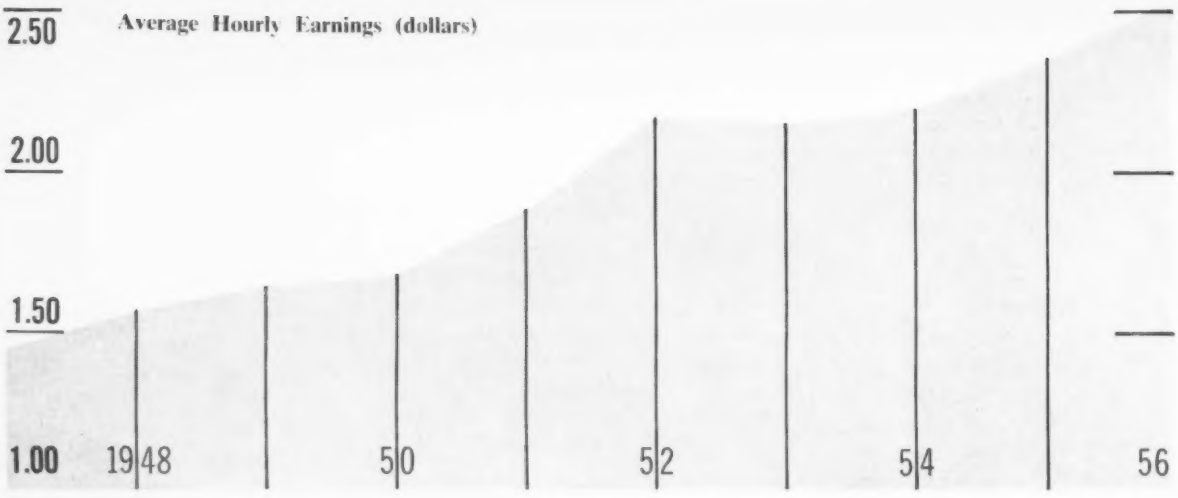
For a man to be regarded as a success, and to feel in his own heart that he has succeeded to the very best of his ability, I think he has got to know that he has served the public interest, as well as the interest of his own company.

Success And Society—To my way of thinking there never has been a time when you could count as really successful any man who shrank from fighting for the lawful freedom and liberty of others just as hard as he fought for the legitimate rights of his own business or those of private enterprise generally. And in order to make an intelligent, effective fight for human liberty and dignity, a man should have a good working knowledge of the economic and political principles that made America the great country it is today.

Ethics Count, too—Business success and a sense of responsibility to society must be matching parts of the same whole if our unparalleled system of enterprise is to grow ever-stronger and endure against the forces that are opposed to it. Our system is going to survive on both its ethical quality and its tangible accomplishments. Of that I haven't the slightest doubt. In our system of enterprise, success and social responsibility go hand in hand.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

FOR NANCY: Ben Fairless at lighting of blast furnace named for granddaughter Nancy during ceremony at U. S. Steel's Fairless Works.



Pattern of Steelworkers' Wage Gains

Why Steel Prices Had to Go Up

Some say U.S. Steel's $6-a-ton price boost is inadequate. Others hail it as hedge against inflation.

Here is what the Corporation was up against while making its decision. — By J. B. Delaney.

▪ Several weeks ago management of U. S. Steel Corp. went into a top-level huddle. The problem: What to do about the wage boost coming to steel labor on July 1?

Here's what management was up against:

1. Employment costs would rise 21¢ an hour, including a 4¢ cost-of-living increase.

2. The United Steel Workers were telling the nation that the steel companies could absorb the increased labor costs without raising prices.

3. President Eisenhower's appeal to labor and management (reiterated last week) for restrain on wages and prices in the interest of combating inflation.

4. The company's need for funds and a decent profit margin to help finance current and pending expansion and modernization projects.

5. A clamor by some producers for price increases of as much as $10 per ton on the average. These producers felt—and still feel—that a substantial increase was in order to offset the higher costs of labor, materials, and services.

It Wasn't Easy — It wasn't an easy problem to solve. Essentially it boiled down to this: How much of a price increase would serve the best interests of the company and the national economy?

Under the circumstances, a price boost averaging at least $8 per ton could have been supported; even if the outmoded yardstick of 40¢ per ton for each penny increase in wage costs were used.

A Compromise — U. S. Steel's decision: A weighted average increase of $6 per ton, effective 12.01 a.m., July 1. It was a compromise. And it was at least $2 less than many people had expected, $4 less than some steel people wanted.

The increases (for details see page 121) ranged from $6 per ton on cold-rolled sheets, $7 per ton on hot-rolled bars, $5 per ton on plates among the heavy-tonnage products, to $15-16 on a few specialty items.

Average 4 Pct — The overall average increase for carbon and alloy products was about 4 pct, compared with an employment cost rise of 6 pct. U. S. Steel's average price is now about 7¾¢ per lb. Its employment costs for hourly-paid workers is now about $3.52 an hour.

Amount of the increase came as no surprise to close observers of

BIG JUMP: How average hourly wages will jump with latest increase. Source for charts: BLS.

U. S. Steel's pricing policy. The company has traditionally leaned toward conservatism on prices. Although the announcement did not say so, many people considered the modesty of the increase a contribution to the fight against inflation.

Some Dissent—The increase did not sit well with some steel people. Several did not hesitate to blast it as "inadequate." But most producers withheld comment, made plans to put through their own increases as soon as possible.

U. S. Steel's president Clifford Hood said the company's total employment costs will rise 21¢ per hour, including the 4¢ cost-of-living adjustment, at the beginning of the first pay period on or after July 1. He recalled that the first phase of the three-year agreement called for an increase of 24¢. This, he said, was followed by a 3¢ an hour cost-of-living adjustment effective last January.

Wage Cost Breakdown — The second phase of the steel labor contract calls for:

A base wage increase of 7¢ an hour, plus an increase of 0.2¢ in the present differential of 6.3¢ per hour between each of 32 job classifications.

The cost-of-living increase of 4¢ per hour, based on rises in the Consumer Price Index of the Bureau of Labor statistics.

An increase to 1 1/5 times the regular rate of pay, from the former 1 1/10 times the regular rate, for non-overtime work performed on Sunday.

An increase to double time and one-tenth, from double time, for work on any one of seven specified holidays.

Other Cost Boosts—U. S. Steel will also give comparable increases to salaried workers covered by union contracts as well as non-union salaried people. Other cost increases that follow automatically with a boost in wages include increases in overtime pay, in holiday and vacation pay, in pay for workers who take time off for jury duty, and in pension and Social Security.

Steel Leader Weir Dies at 81

Colorful spokesman and leading exponent of independence in business dies shortly after retiring from company he founded.

Action on controversial issues obscures solid accomplishments for industry, community and country.

• The long career of Ernest Tener Weir is at an end.

Last of the major steel figures to give up control of the company he founded, he died last week at the age of 81. It was only a few short weeks after he stepped down as chairman of National Steel Corp., the nation's sixth largest steel producer.

Mr. Weir, who did not hesitate to say publicly what others in the industry were thinking privately, was known as the "lone wolf" of the steel industry.

Many Accomplishments — His accomplishments as founder of Weirton Steel Co. and organizer of the National Steel Corp. tended to be obscured by his more colorful clashes with the NRA in 1933 and his outspoken opinions on government interference in business, steel prices, and other controversial issues.

Mr. Weir was born in Pittsburgh Aug. 1, 1875. After becoming plant manager at the American Tin Plate Co., Mr. Weir and J. R. Phillips purchased the Jackson Sheet and Tin Plate Co., Clarksburg, W. Va.

Expansion Minded — With the company fast expanding, Mr. Weir purchased a tract of land on the Ohio River at the present site of Weirton. By 1915, the company was a major producer of tinplate. In 1918, the firm became the Weirton Steel Co.

In 1929 Mr. Weir initiated the steps which resulted in the organization of National Steel, through the merger of assets of Weirton Steel, Great Lakes Steel Corp., Hanna Iron Ore Co. and Hanna Furnace Corp.

At that time, National Steel was ninth in capacity. In addition to its expansion, National Steel's financial structure has been notable. The company has earned a profit in every quarter since its organization.

After Mr. Weir's retirement from chairman of National Steel, no successor was immediately named. Outgoing Treasury Secretary George M. Humphrey will probably be named to the post when he leaves the government.

E. T. WEIR: From $3-a-week clerk to head of National Steel Corp.

Look For TV Spurt In Last Half

Metalworkers Will Benefit From Pickup

Sales are running only one per cent behind year ago. Yet inventories are down.

Last-half output will approach, possibly exceed record set in '55—By K. W. Bennett.

■ For three weeks, television manufacturers have hopefully lifted the wraps from new '57 models. It looked like a sacrifice play. First quarter television manufacturing was at its lowest point since 1952. Late production figures suggest the manufacturing rate dropped again in early second quarter.

But television will be a hot market for metalworking products through second half. This is not wishful thinking on the part of the TV sales force. Manufacturers cut back production through the first five months of this year by 25 pct as compared with one year ago. Inventories of finished TV sets tumbled from 2.6 million sets one year ago, to 2 million on hand as of June 1 this year.

Inventories Low—John M. Otter, Executive vice-president of marketing for Philco Corp., reports: "We regard television sales during the first five months of the year as a barometer for the remainder of the year. At the moment, retail sales are only 1 pct behind the year ago period. Yet production is 13 pct behind last year. Inventories are cut back."

The Philco estimate on production cutbacks is conservative, as can be seen from the 25 pct figure above. April production was the lowest for that month since the forced slowdowns of the Korean War period.

Portables Are Moving—Out of the sales battle of the past seven months have emerged two new sparring rules. (1) Price cutting is not an automatic sales producer. Zenith has been a top seller for months, stuck grimly to its pricing despite underselling by competitors, has plugged quality rather than low price. (2) If you're not building portable TV, it's time to start. TV men predict portable TV sets will have their biggest sales year in 1957.

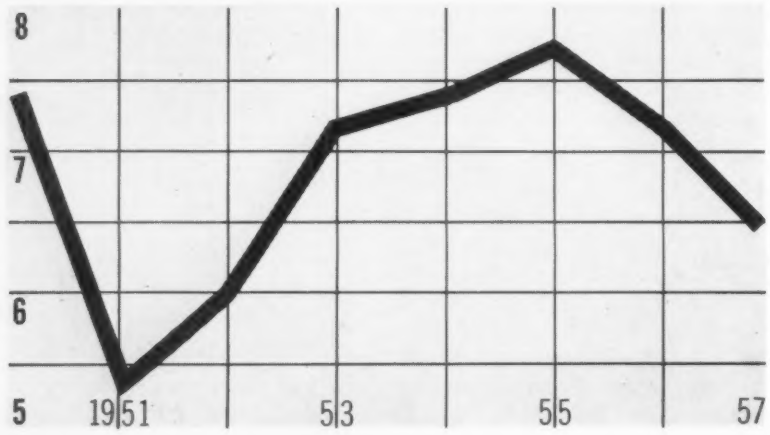
The price lesson is already being absorbed. One major manufacturer, while it has granted price cuts to its distributors, is launching a dealer education program to the effect that they'd best stop cutting each other's throats pricewise. The message is well received.

Production Pushed—Another effect: A boost in portable prices to nearly $170. Like a used car, the asking price will be low, but the extras will add up. One line will even boast a saddle leather exterior, over a steel cabinet.

General Electric, Westinghouse, Admiral, Motorola, have pulled their new models from the design shops. All seem guardedly confident they have sired winners. At least one manufacturer is already pushing production to year-ago levels. The normal heavy TV manufacturing season doesn't begin until August—at the earliest.

Stiff Pace — The present goals: 6.5 million (conservatively) to 7 million sets this year. Last year's total

Will Second Half Bring TV Pickup?



was 7.2 million sets. To make up production losses in first half 1957, manufacturers are already setting a stiff production pace for September and October. A few are beginning earlier. A manufacturer who normally shuts down for a two week plant-wide vacation in July, has dropped vacation plans for this year.

There's good reason for haste. Monthly average production in 1956 was 600,000 units. The record was 1955, at an average 645,000 units per month. To hit even the conservative 6.5 million unit total for 1957, the industry must produce an average 608,000 sets per month through the June-December period. In a 6.8 million unit year, a figure now used by at least two large TV manufacturers in their '57 sales planning, the monthly average would hit over 900,000 units per month, an all-time record.

Steel Benefits — Portables will sell strongly in 14 in., 17 in., and 21 in. screen sizes, probably strongest in the 17 in. size. The cabinets will lean heavily to steel. The big hunt is aimed at a lighter portable unit. Steel, with its high strength-weight ratio, and with most producers already skilled in the forming of steel cabinets, will be a natural.

The low forecasts in total TV manufacturing this year are misleading. TV will be a hot market in second half for more workers, more metalworking tools, components.

More Steel Rolls

General Steel Castings Corp. will build a new manufacturing building at its National Roll & Foundry Div., Avonmore, Pa.

New equipment to be installed includes a 20-ton electric furnace, heat treating furnaces, pouring pit, and other foundry facilities.

The project will enable National Roll & Foundry to cast steel rolls up to 35,000 lb. Present maximum size is 20,000 lb.

Monthly capacity will be upped from 150 tons to 400 tons.

Enameled Aluminum Catches On

Porcelain enamel on aluminum is just beginning to develop new markets.

When it gets rolling, it will be a major factor in construction and other applications.

▪ Porcelain enamel on aluminum looks like a real comer in metalworking. Porcelain Enamel Institute predicts that by 1961 production will be up 500 pct over current levels.

Output this year is expected to reach 5.2 million square ft. By 1961, production will hit 23 million, says PEI. On the basis of this forecast, aluminum used by this growing industry will jump from 5.5 million lbs. in 1957 to about 21.5 million lbs. in '61.

Some of this prosperity will rub off on lead producers, whose product is used as a flux to lower application temperatures.

Big for Building—Biggest potential for porcelain enameled aluminum is construction. It's now taking more than half of total output. PEI figures show that since 1954, 724 colored, porcelain enamel-clad buildings have been erected.

The aluminum specialists say this trend will continue, and that they will land a bigger share of the market. They expect to go from 3.8 million square ft. this year to around 15 million square ft. by 1961. This would still be more than half total industry output.

Other major markets include signs, appliances, transportation and utensils. They are each using from 200,000 to 300,000 square ft.

More Than a Million—By 1961 all but transportation will be buying at least a million square ft., with sign makers, and appliance makers topping the 2 million square ft. mark, says PEI.

Here are some of the reasons why porcelain enamel on aluminum makers are optimistic:

They look for highway construction programs to step up demand for traffic and highway signs.

They expect small and large appliances featuring porcelain enamel on aluminum to increase.

They predict the trend toward color in cooking utensils which double as serving dishes will grow.

Forecast – Porcelain Enamel on Aluminum

Market	1957	1961
	Production in Sq. Ft.	
Building Materials	3,800,000	15,000,000
Signs	250,000	2,600,000
Appliances	200,000	2,000,000
Transportation	200,000	600,000
Sanitary		200,000
Utensils	300,000	1,100,000
Military and other	450,000	1,500,000
TOTAL	5,200,000	23,000,000

Source: Porcelain Enamel Institute

Everybody Talks About It—

But Little Action Ahead On Inflation

The experts warn of trouble over inflation. But prices continue to spiral upward.

Senate group looks into the problem. Yet observers feel little action likely. — By N. R. Regeimbal.

▪ Neither the Administration nor Congress, despite mounting concern, is likely to do anything to halt the serious threat of a new inflationary spiral.

Top monetary experts warn that the upward surge of wages and prices now building up could cause "serious trouble." But the main cause of inflation — sky-high government spending, high taxes, wage increases, inadequate depreciation, and rising prices—appear destined to continue virtually unchecked.

The Slipping Dollar — Government efforts to hold back inflation, through controversial tight money policies, have provided only a limited and temporary block. The purchasing power of the dollar has dropped to only 49.8 cents, compared with full value in 1940.

Wholesale prices increased from 112.8 on the government's index (average 1947-49 prices equal 100) in March of 1956 to 117.2 in April of this year. Consumer prices on the same index climbed from 114.7 in March a year ago to 118.9 in March of this year. Both appear likely to continue upward.

ON THE INDEX: Sen. Harry F. Byrd (D., Va.), is heading the Senate Finance Committee investigation on why U. S. price indexes are rising.

What's The Cure?—The Senate Finance Committee, under conservative Sen. Harry F. Byrd, D., Va., is now neck-deep in a searching investigation of the reasons and cures for the inflationary pressures building up. Top fiscal brains of varying political and economic backgrounds testifying before the committee agree on the dangers, but disagree on the causes and cures.

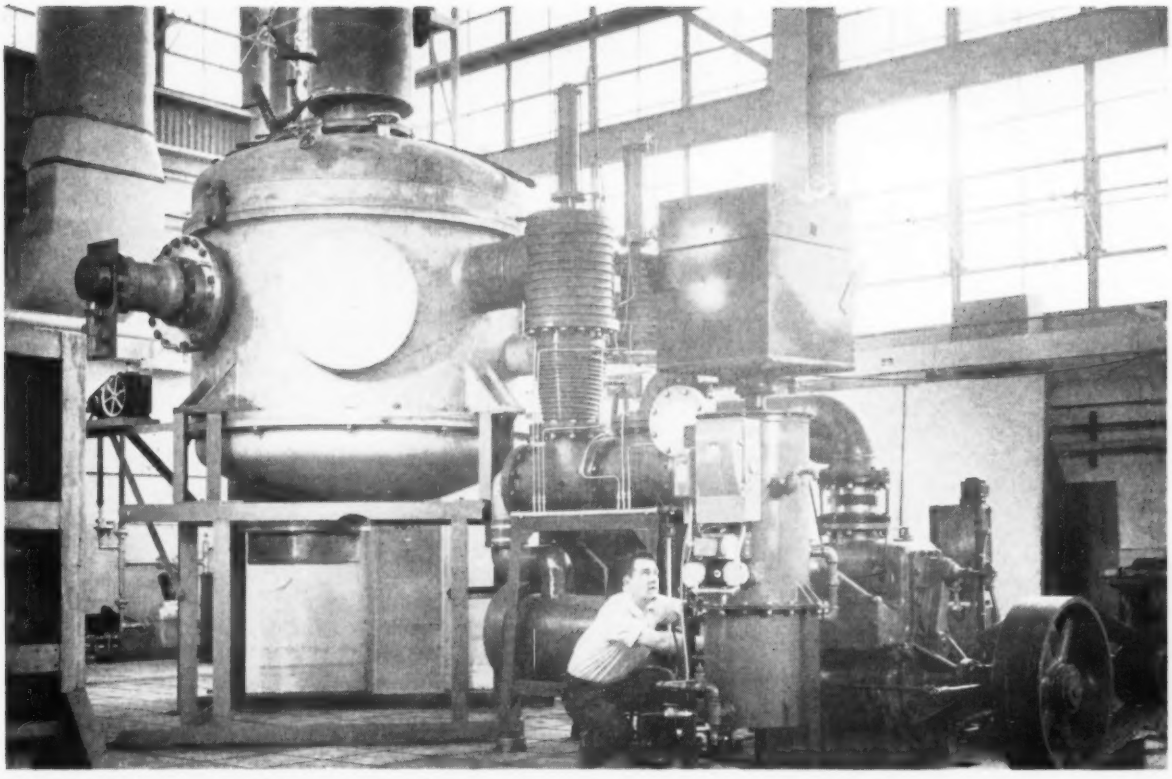
No Relief Seen—And in spite of some dramatic economy moves in Congress, most observers still expect total spending in the fiscal year beginning July 1 to run close to the $73 billion the President proposed.

More To Come — Railroad freight rates are expected this summer to go up about 10 pct under an order of the Interstate Commerce Commission. Truck rates will follow with a similar rise. Steel prices rose this week.

Government's contributions to the newly-developing inflationary spiral include the pressures of a $38 billion defense budget, price support subsidies for various metals and products as well as farm production, and granting of loans on "artificially easy terms," most witnesses agree.

Who's To Blame?—Labor and management come in for their share of the blame, too. Round after round of wage-price rises have sown the seeds of the budding inflationary surge.

The study will produce little action. The government's budget for the fiscal year beginning 12 months from now is expected to be as large or larger than that now under debate



IN DEMAND: A new 1000 lb. vacuum furnace near completion at Consolidated Vacuum plant, Rochester, N. Y.

Big Gains in Vacuum Metallurgy

Already indispensable in nuclear metals group, vacuum melting units are moving into big tonnage fields.

Major companies have installed sizable units, are installing more. Vacuum degassing of steels is also making strides.—By G. G. Carr.

▪ Vacuum metallurgy is growing up fast. There are growing pains, to be sure, and a security smog is obscuring many details, but the progress is certain and the outlook bright.

Vacuum melting units are proving indispensable for high-purity nonferrous metals, particularly in the "nuclear metals" group. But tonnage applications seem sure to come in the ferrous field.

Vacuum melted high-purity alloys are rapidly becoming a basic commodity. Their greater stress-rupture strength at high temperatures and better ductility are setting up a strong demand for vacuum melted material, especially the superalloys.

Degassing Probabilities — Similarly, vacuum degassing of steel—carbon steel, not high alloy—is expected to become big business very shortly, according to David E. Stokes, manager, Vacuum Equipment Div., F. J. Stokes Corp., Philadelphia.

Progress to date bears out this warning of a year ago. Reported THE IRON AGE, Jan. 26, 1956, P. 67: "If you're in the metalworking industry, progress in vacuum metallurgy should be a starred item on your list of current interest . . ." What was true a year-and-a-half ago is even more true today.

Steel Companies Active—If one of your major customers starts talking vacuum, you'd do well to look sharp. Talk persists in steelmaking centers that several large steel users are putting up money for current steel expansion on condition that vacuum melting and pouring facilities be included.

The story goes that these companies felt that their regular steel sources were dragging their heels on vacuum metallurgy. So steel buyers decided to help out more cooperatime mills.

New Uses Coming — Don't be misled into thinking that vacuum melting will be the private property of the big companies. It's true that vacuum melting will be concentrated with primary metal producers for a long time to come.

But such other branches of vacuum metallurgy as vacuum pouring,

vacuum heat treating, and vacuum diecasting may bulk large in your own early future. Vacuum metals for investment casting are coming up fast, to take just one example.

In ferrous production, the big use so far is for superalloys. Both number and size are growing.

Under Construction—Utica Drop Forge & Tool Corp., which has two 2000-lb Stokes induction units, is reported to be building a much larger unit. Crucible Steel's Vacuum Metal Corp. is adding a 3000-lb induction furnace. Allegheny Ludlum is now completing a consumable electrode furnace to handle a 26-in. or 12,000-lb ingot. When its new furnace is completed, Allegheny will have a battery of six melting units with a combined capacity of 2 million lb per month at its Watervliet, N. Y. plant.

Ingot size and availability are crucial. Despite considerable publicity and widespread interest, vacuum melted metal is just now becoming available in quantities and sizes large enough to permit wide adoption. Allegheny Ludlum, for example, believes that the size of its new consumable electrode furnace, quality apart, will be of first importance.

What's Going On—Capacity figures are hard to come by. Some material is government classified. In other cases, furnace owners are close-mouthed. And the field has been developing too fast to establish a neat statistical setup. But some indicators of size and growth are available.

Consolidated Electrodynamics Corp., for example, reports that it has built vacuum melting and casting furnaces for various metals for 29 customers since 1952. Size and number for five are AEC-restricted. Of the balance, two furnaces are 1000-lb units, eight are 300-lb, one is 100-lb and the rest are 50-lb units.

NRC Equipment Corp., subsidiary of National Research Corp., has built 15 vacuum induction furnaces for steel and superalloys. These include a 300-lb unit at Crucible Steel's Vacuum Metals Div. for bearing and tool steels; a 200-lb unit at Austenal Laboratories for high temperature alloy billets; and a 2400-lb furnace for Kolcast Industries for high temperature alloys.

More Plans—F. J. Stokes Corp. plans to build at least five major installations this year.

Allegheny Ludlum's consumable electrode design is now being marketed by Lectromelt Furnace Div. of McGraw Edison. First sale of the A-L process has been to Midvale-Heppenstall Co., Philadelphia manufacturer.

These do not include small units for laboratory and research purposes. These smaller furnaces are selling in quantities described as substantial.

Vacuum pouring or stream degassing may prove to be of greater significance to metalworking generally. One equipment maker predicts that "it is seen as a very likely prospect that every forge shop in the country with its own melting capacity will need to install a stream-degassing unit."

New Use—Principal use for the stream-degassed steel initially is for rotors and for large steam-powered generating equipment. Similar performance requirements exist for crankshafts for large diesel engines and large forged rings. Makers of rolling mill rolls are also most interested.

Some of the country's largest forge shops are reported just about ready to sign up for this equipment. United States Steel Corp. already has a 150-ton unit in operation at its big research center, Monroeville, Pa.

Vacuum melting and vacuum pouring may well go different ways, with vacuum melting reserved for special metals, superalloys and similar applications. Trade talk is that stream-degassed carbon steel will appear on the market in the near future, primarily for forgings, at little or no advance in price. The big future of stream-degassing may lie there.

Nuclear Building Pace Steps Up

Atomic energy is still a growing market. AEC Chairman Lewis L. Strauss reports that during 1957 reactor construction will call for a $270 million outlay. Pure nuclear research will call for another $25 million, and at least $33 million will be expended for instruments.

To produce fuel for the growing list of reactors, the AEC believes the uranium mining and processing industry will spend $200 million. The total exceeds $500 million.

Building Begins — Chairman Strauss spoke as Commonwealth Edison Company of Chicago broke ground for a $45 million nuclear power, electric generating facility 50 miles southwest of Chicago. The unit will be the nation's largest power reactor when complete, but will be only one of eight power stations scheduled to begin delivering electric current by the mid-1960's.

The defense phase of atomic development continues to grow at an equally rapid pace. The atomic submarines Skate, Swordfish, Sargo, and Sea Dragon are already under construction. A fifth atomic sub, Halibut, is already past the drawing board stage. It will fire guided missiles.

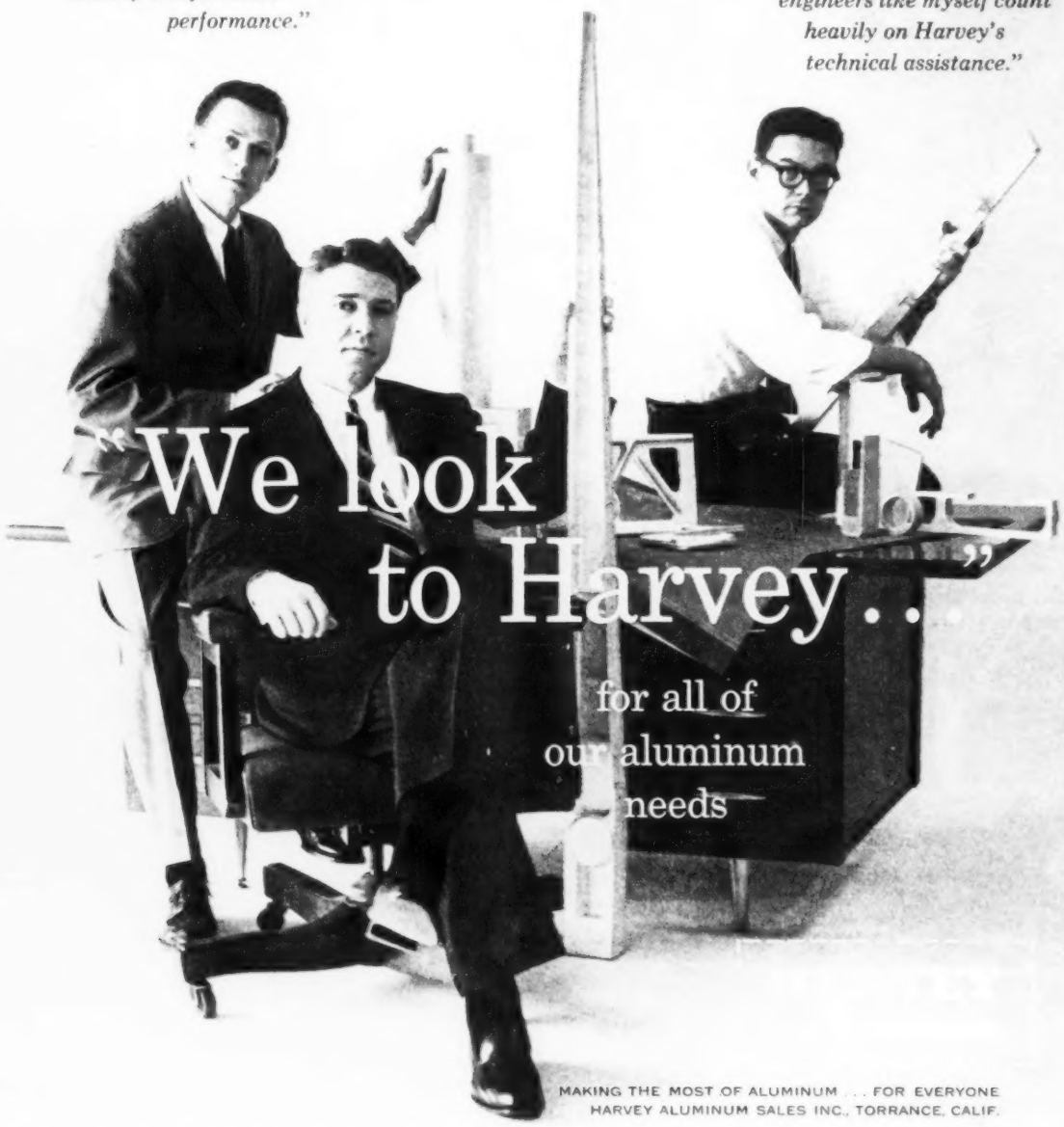
Giant Carrier Plans—Westinghouse Electric has already begun purchase of components for the eight-reactor, 85,000-ton aircraft carrier. And procurement for Skipjack, high speed atomic attack sub has begun. Skipjack will be the first of five submarines planned in its class. The aircraft carrier, as presently planned, will operate 32 steam turbines from the eight nuclear reactors to be housed in its hull.

It adds up to a lot of dollars, most to be spent in metalworking fields. It also means a lot more money will have to be spent for research.

"As a purchasing man... I know that the best measure of a supplier is dependability. These impact extrusions are a good example of Harvey's dependable performance."

"Harvey is our prime source for light and heavy press extrusions and forgings. From management's viewpoint, we can always rely on Harvey's traditional high quality and service."

"Material from Harvey gives us all the inherent advantages made possible by the latest production equipment, complete laboratory and test facilities, and exacting quality control. That's why design engineers like myself count heavily on Harvey's technical assistance."



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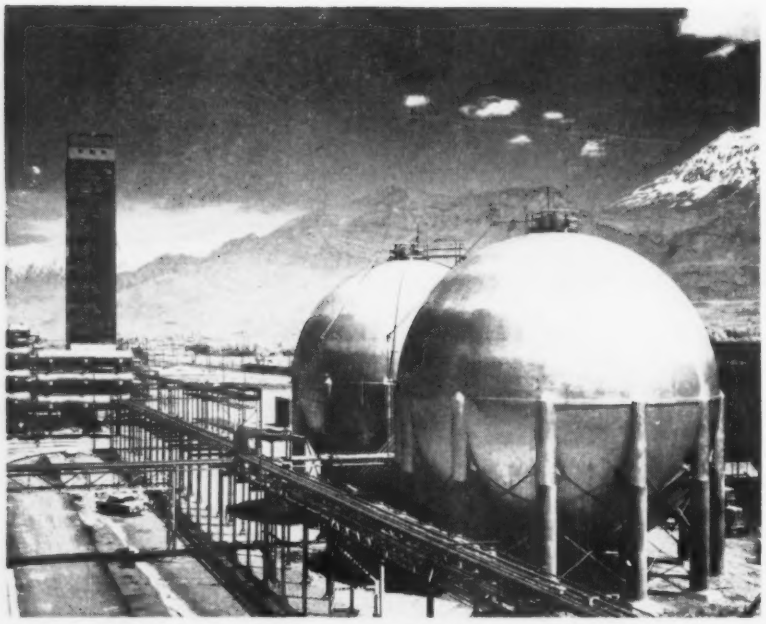


STEEL FIRST, Two 2100-ton Hortonspheres hold liquid anhydrous ammonia, at new nitrogen plant, U. S. Steel's Columbia-Geneva mill, Provo, U. Liquid ammonium nitrate is formed into shot-sized prills in the tower. Installation is the first of its kind at a major U. S. steel plant.

House Group Opposes Crisis Buying

Crisis methods of buying military items is annoying a special investigations group of the House Armed Services Committee. Emergency contracting for military goods were suitable in the Korean War, but they now endanger free competition, the group holds.

Chairman Hebert (D., La.), of the House subcommittee, charges the military with failing to stand by a promise made in January, 1956. At that time, he says, the Defense Dept. and the major services promised not to contract under authority of the national emergency proclamation of 1950.

Wants Uniform Policy — But, says Mr. Hebert, Korean emergency policies are still being used, for $5.3 billion of $13.5 billion spent.

His investigations subcommittee would change the Armed Services Procurement Act, directing the Defense Secretary to issue new buying rules. These would be uniform throughout the military services.

The group also urges the military to overhaul its arrangements for pre-award survey of plants and firms considered for military contract work.

Republic Builds New Coke Ovens

Republic Steel Corp., Cleveland, will spend $14 million for two new batteries of coke ovens for its Cleveland plant. The new units will take about a year to build, and will replace older ovens, built in 1916.

Each of the new batteries will be more than 200 ft long, 37 ft deep, and 26 ft high. They will feature stainless steel sealing edges on the doors to prevent smoke leakage, and double collecting mains.

Bigger—Capacity of the new units will be about 20 pct greater than the ovens they replace.

Also included in the project is installation of a mechanical charging car, four new centrifugal, multistage gas boosters, modern screening equipment, and improved coke handling facilities.

Operation in August—Construction of another new battery has been underway for almost a year. This new battery, also to replace a 1916 one, is scheduled to go into operation in August.

Small Business Awards

Negotiated bids are almost as desirable to small military suppliers as advertised bids, latest Defense Dept. figures show.

The Pentagon had been fretting at congressional criticism of heavy dependence on bid negotiation. Now it brings out data covering prime contracts with small business, July 1956 through last March, indicating little difference in the two types of awards.

More Than Half—Small firms signed up for 59.2 pct of the advertised contracts offered to small business during those months, says the Defense Dept. The small suppliers obtained 56 pct of the negotiated contracts available during the same months.

On a dollar basis, the results are also close together.

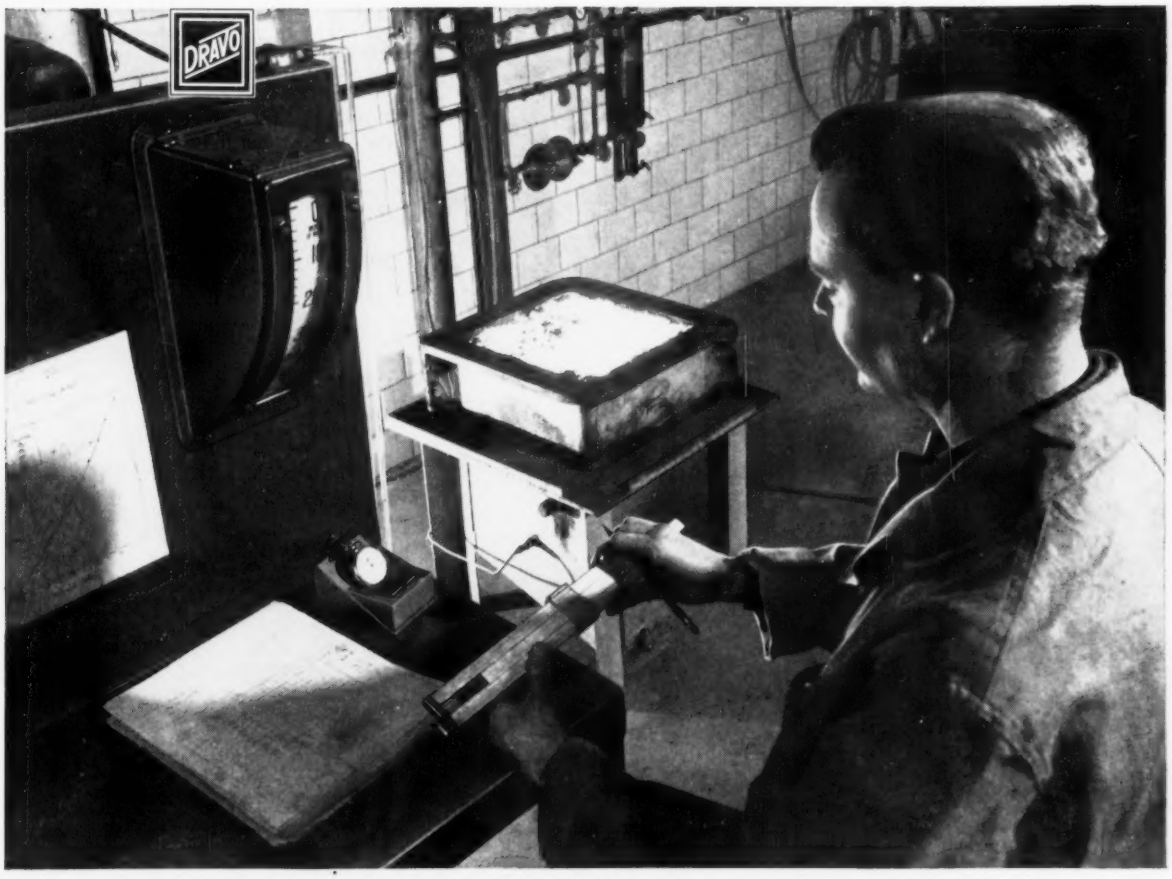
J & L Buys Cold Metal

Jones and Laughlin Steel Corp., Pittsburgh, will take over the assets and business of Cold Metal Products Co., Youngstown, O.

Boards of Directors of both companies have agreed on the move. It is now subject to ratification by shareholders of Cold Metal Products Co. at a meeting to be held July 18 at Youngstown.

N.E. Boosts Pig Iron

Mystic Iron Works, New England's largest pig iron producer, has announced a 50¢ per ton price increase, effective in July. New prices are: basic—$66.50 per ton, foundry—$67.00 per ton, malleable—$67.50 per ton. Producing point is Everett, Mass.



Dravo opens new Research Center in Pittsburgh

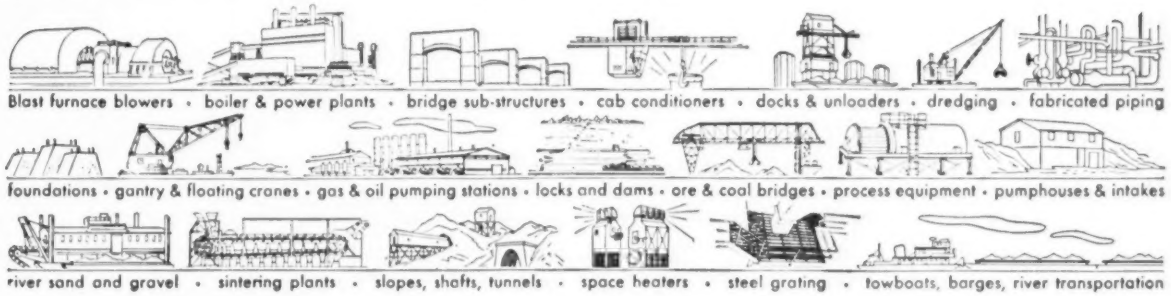
Solving problems for many industries

- What happens to cement under extreme temperature changes?
- How can thick, low-grade oil be burned in a space heater?
- Can "growth" be prevented in sinter machine grate bars?
- Can rudder design improve towboat maneuverability?

Finding answers to these and hundreds of other problems is the job of research teams at Dravo. The partial list of products and services shown below suggests how unusual the task is. It involves almost every industrial field: construction, steel, chemical, petroleum, power, marine and many others. It is concerned with practical problems of materials and methods, equipment performance, quality control and cost reduction. It includes studies that may be of specific interest to you.

An issue of our publication, Dravo *Review*, describes these activities and the new Research Center where much of this work is performed. May we send you a copy? Write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION



Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

Tough TAPE that takes print!

Retaining brand identification on both product and container was a difficult job for this manufacturer—until he thought of tape. Now, printed "Scotch" Brand Acetate Fibre Tape does it quickly, easily—and economically. Tape resists scuffing and abrasion—sticks tight to coated surface of chain links.

Perhaps *you* have a need for just such a tape. It's wet-proof, long-aging and sticks to most any surface. It's available in 12 brilliant colors—plus transparent.

Or perhaps you have a need for one of the 300 other "Scotch" Brand Pressure-Sensitive Tapes. If so, please write. We're anxious to help you. And there's no charge or obligation, of course.

ACETATE FIBRE TAPE . . . *one of over 300 Pressure-Sensitive Tapes, trademarked . . .*

Reg. U.S. Pat. Off.

SCOTCH

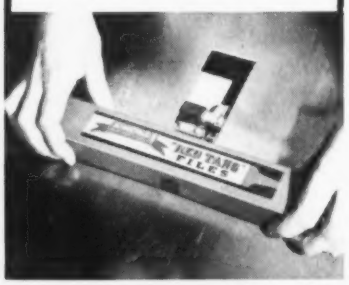
BRAND

WORLD'S LARGEST MAKER OF PRESSURE SENSITIVE TAPES
TWO TIMES AROUND THE WORLD
1957 TWO BILLIONTH ROLL YEAR 1957

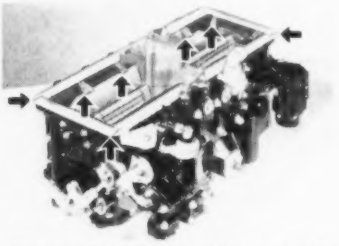
The term "Scotch" is a registered trademark of Minnesota Mining and Manufacturing Company, St. Paul 6, Minn. Export Sales Office: 99 Park Avenue, New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.

PRODUCT OF 3M COMPANY RESEARCH

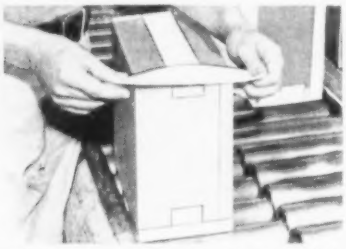
Look what you can do with it!



PACKAGE parts and products quickly, easily, with "Scotch" Brand Acetate Fibre Tape and Automatic Box Sealer S-70. Acetate fibre tape can be printed with sales message, if desired.



SIMPLIFY PRODUCTION with tape. Here you see "Scotch" Brand Tape No. 700 used to seal small carburetor openings against dirt. Different colored tapes facilitate inspections.



SEAL cartons against moisture with "Scotch" Acetate Fibre Tape No. 710. Adheres quickly and securely; forms a strong seal that resists abrasion and scuffing. This tape can "take it!"

SEND FOR free folder describing remarkable physical properties of "Scotch" Brand Acetate Fibre Tape and giving valuable use suggestions. Write on your letterhead to "3M" Co., St. Paul 6, Minn., Dept. DE-77.

Neil Burgess

An Engineer Solves a Paradox

The young men who are growing with the aircraft industry are its biggest asset.

But the shortage of qualified young engineers is hampering progress.

Here is how Mr. Burgess and General Electric are overcoming this handicap.

NEIL BURGESS: A long-range program must have maximum flexibility.

▪ The major area of strength in today's aircraft gas turbine industry is its youth.

But to one of the industry's youngest oldtimers, 38-year-old Neil Burgess, project manager of General Electric's J79 jet engine and a top authority on turbojet powerplants, the industry's strength is also a major weakness. It's paradoxical, yet true.

Needed: Experience — Rapid growth of the gas turbine industry, Mr. Burgess believes, has "brought about the need for thousands of engineers in an economy already short of engineering personnel. This, in turn, places heavy responsibility on the few 'oldtimers' with 10 years or more of experience."

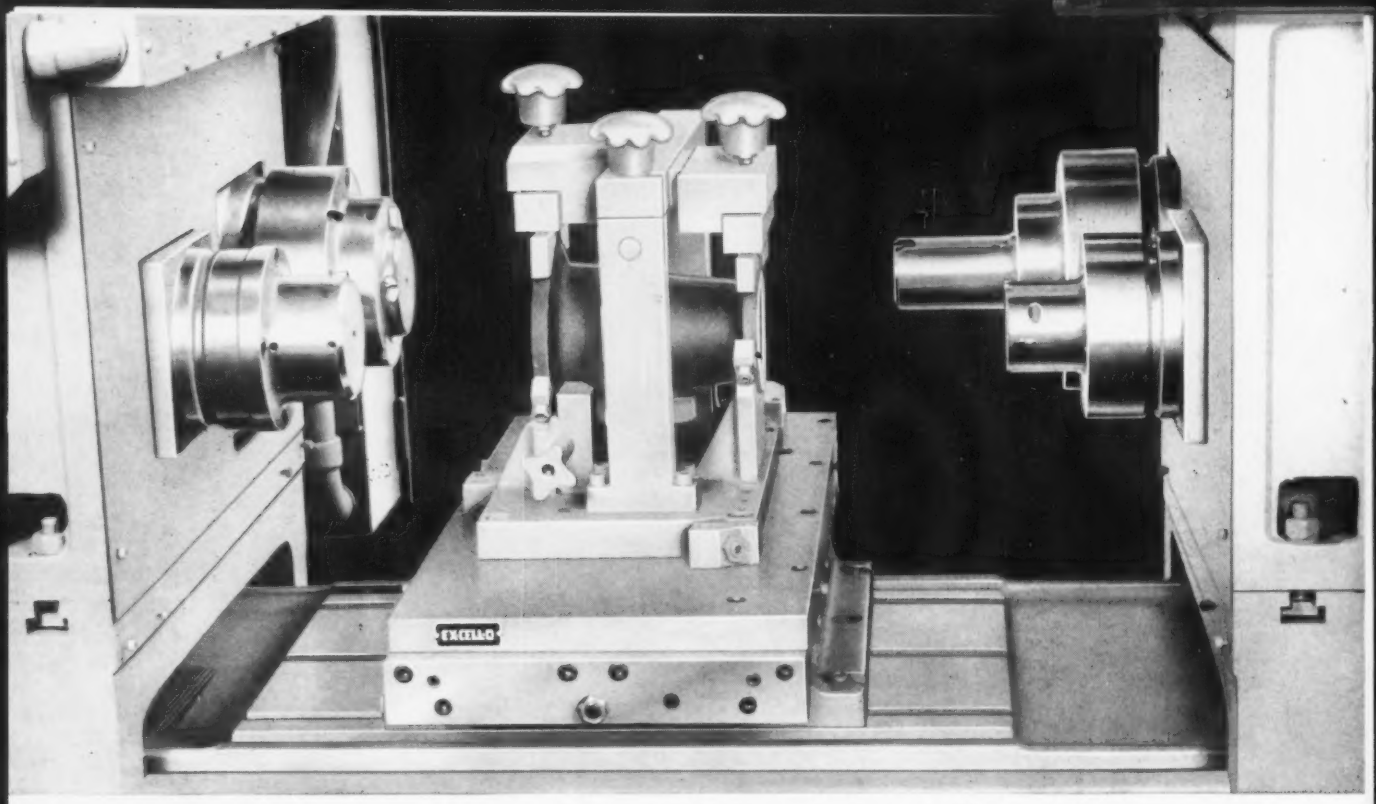
Young ideas are important and necessary in industry, but, apparently, there is no substitute for seasoned experience. To get the most out of the talent at his disposal, Mr. Burgess first establishes a long-range plan with broad but well-defined objectives.

Flexibility Is Vital—"Then within the framework of the plan," he explains, "we establish short-range programs and milestones which are well understood and agreed to by all, and which will permit the engineering team and management to judge progress at frequent intervals." But most important, he adds, be prepared to change short-range goals promptly and effectively when required.

This way of operating has helped GE develop the J47 engine, which for the past decade has been the mainstay of the U. S. Air Force. It has also produced the J79, that powers the Convair B-58 Hustler, the U. S.' first supersonic bomber; the Lockheed F-104-A Starfighter; and the Grumman F11F-1F Tiger fighter.

Gets Early Start—Born in Melrose, Mass., Neil Burgess has literally grown up with the jet age. His 18 years experience with gas turbines runs parallel to the development of the jet engine. He joined GE after he was graduated from the University of Rochester in 1939. He received an MS from Massachusetts Institute of Technology in 1941.

In planning a program such as the J79, Mr. Burgess says, the major obstacle is establishing a set of end-point objectives which are consistent with requirements as they will exist several years in the future. "If one started a design today to meet today's requirements with today's technology," he points out, "the engine would be obsolete long before it could be brought into production."



One of several fixture arrangements used for machining valve parts.

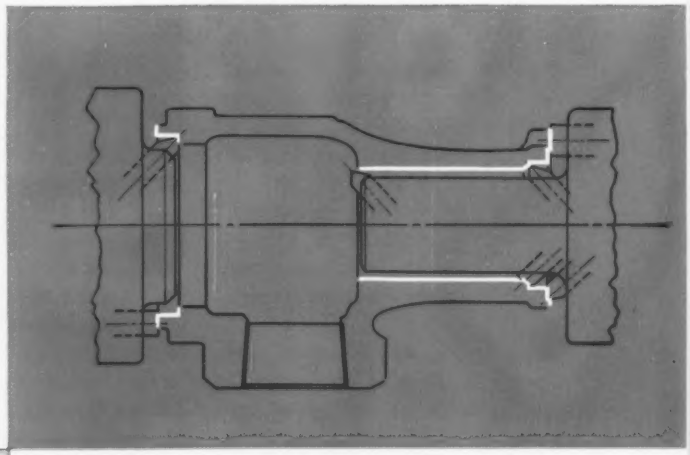
Fast and Flexible

SHORT RUN COST SAVER...

This Ex-Cell-O 17-A Precision Boring Machine rough bores, plunge faces, finish bores and chamfers a wide range of assorted cast-iron valve bodies and bases. Production schedules require relatively short runs of each size, so the tooling shown here has set blocks to accommodate the various parts.

Designed for medium and large size workpieces, the double-end 17-A Precision Boring Machine can handle identical operations at either end; rough at one end, finish at the other; or perform an entirely different operation at each end. So you can see the cost-saving versatility of this two-in-one machine.

Perhaps slow changeovers are inflating your production costs. If so, why not call your Ex-Cell-O Representative or contact Ex-Cell-O in Detroit.



White lines represent cuts made on a typical part.

Here are a few sizes of the valve bodies and bases processed on the Style 17-A Machine.

EX-CELL-O CORPORATION — *Machinery Division*

DETROIT 32, MICHIGAN

XLO EX-CELL-O FOR PRECISION

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

57-22

Most Prices Now Based on Cost

The days of price cutting without compensating economies may be numbered in growth industries.

Fair profit on investment is required for expansion necessary for welfare of the nation.

■ You probably noticed last week that a large petroleum company raised its price of gasoline in the midst of an admitted glut on the market. Instead of using this as an opportunity to undersell this price booster, its competition promptly "met" the increase.

This is a reverse twist to one of the old rules of competition: That when business is tough, that's the time to cut prices and grab off a bigger share of the market by undercutting other producers.

It's Being Done—Actually, it doesn't work out that way. Competition on prices is healthy, but the business world is strewn with the wreckage of companies that cut prices without providing economies or finding new markets that would permit lower prices without cutting profit margins.

Without making too much noise about it, some of the major industries have been following that policy for some time. That is, meeting higher costs with higher prices, in spite of tense competitive markets. In other words, basing prices on costs.

It can be disguised in many cases. The automobile industry, for example, has raised its prices, but takes some of the public sting out of it by offering "new engineering and styling advances," or adding as standard equipment, what formerly was optional.

Has No Choice—But more and more, as materials, labor costs, and tooling costs continue to climb, industry is forced to raise its prices even in competitive markets.

This is particularly true in any of the growth industries that know they must expand to meet future needs in the years ahead. Cutting prices in a period of temporary softness, or failing to meet unavoidable increased costs, is just not realistic or good for the industry. Or good for the country in the long run.

That's why there will be little noise and fury over current steel price increases. The public, as well as steel's customers, is beginning to learn that industry must be healthy to grow, and the growth of basic industry is vital to its own interests.

Labor Shortages Hit Expansion

Employment At Record—Some of the bearish business talk can be discounted by the mere fact that employment continues at a record high. In fact, some labor shortages are still occurring in certain areas of the country.

The Labor Dept. reports that in addition to the highly publicized shortage of engineers, draftsmen, machinists, tool and diemakers are in need. Well-qualified stenographers and typists are also in short supply.

"Some areas reported that difficulty in recruiting certain key personnel was slowing down planned employment expansion in some plants," a Labor Dept. report states.

Plans Cut Back—Examples: In Boston an increase in an electronics plant may be slowed. In Baltimore, a critical shortage of arc welders, tool and diemakers caused a restriction in planned expansion.

And in Scranton, an area with an overall surplus, a shortage of engineers and draftsmen may curtail some expansion in a fabricated metals industry.

Business Still Seeks a Trend

Indicators Needed—Business is still looking for a trend. For over a year, there has been a complete absence of indicators to point to an upward or downward movement of significance.

As the summer months take over, the favorable signs predominate, although a few soft points keep the pessimists happy and a few businessmen slightly on edge.

Non-Workers Benefit—Of significance is the fact, first noted here somewhat as an oddity, that the major portion of the rise in personal income continues to come from old age and survivors' benefits. They continue to increase as groups covered for the first time by social security become eligible for benefits.

But consumer demand remains high, according to Dept. of Commerce monthly reports. They indicate that consumer buying is providing a significant lift to the economy.

Inventory control measures also continue to depress basic industries to a slight extent and account for a moderate downtrend of orders.

AUTOMOTIVE

Behind GM's Foreign Car Plans

U. S. Tooling Indicates Serious Intent

Decision to import its foreign-made cars to compete in U. S. markets is a change in policy.

GM plans to find out if U. S. public wants a small car. If so, must it be European?—By H. R. Neal.

▪ Is General Motors Corp.'s decision to enter the small car field in September a hasty move based on the strong showing of foreign-built cars in the American market this year?

Or is it a calculated move that has been in the planning stages for some time?

GM's interest in the light car field goes back a number of years to experiments with the Chevrolet Cadet, a scaled down model of the Chevrolet. These studies showed that GM could cut only about $200 from the cost of a Chevrolet. A light car, to be profitable, must be designed as a light car.

Why Import? — Importing of light cars presents certain advantages over introduction of an American-built light car to the U. S. Market:

1. It gives GM a foot in the door without high tooling costs for an untried product.

2. It gives GM a chance to evaluate the worth of the economy car in the American market and possibly answer two questions: Do Americans really want a light car? Must it be foreign?

Different Story Now — GM repeatedly had denied in the past all intentions of importing any of its foreign-built cars to compete for sales in this country. Denials were made just a few months ago when GM first displayed its Vauxhall Victor here. What changed GM's thinking? Has the small or foreign car market grown from a kitten to a full size cat that is able to take care of itself?

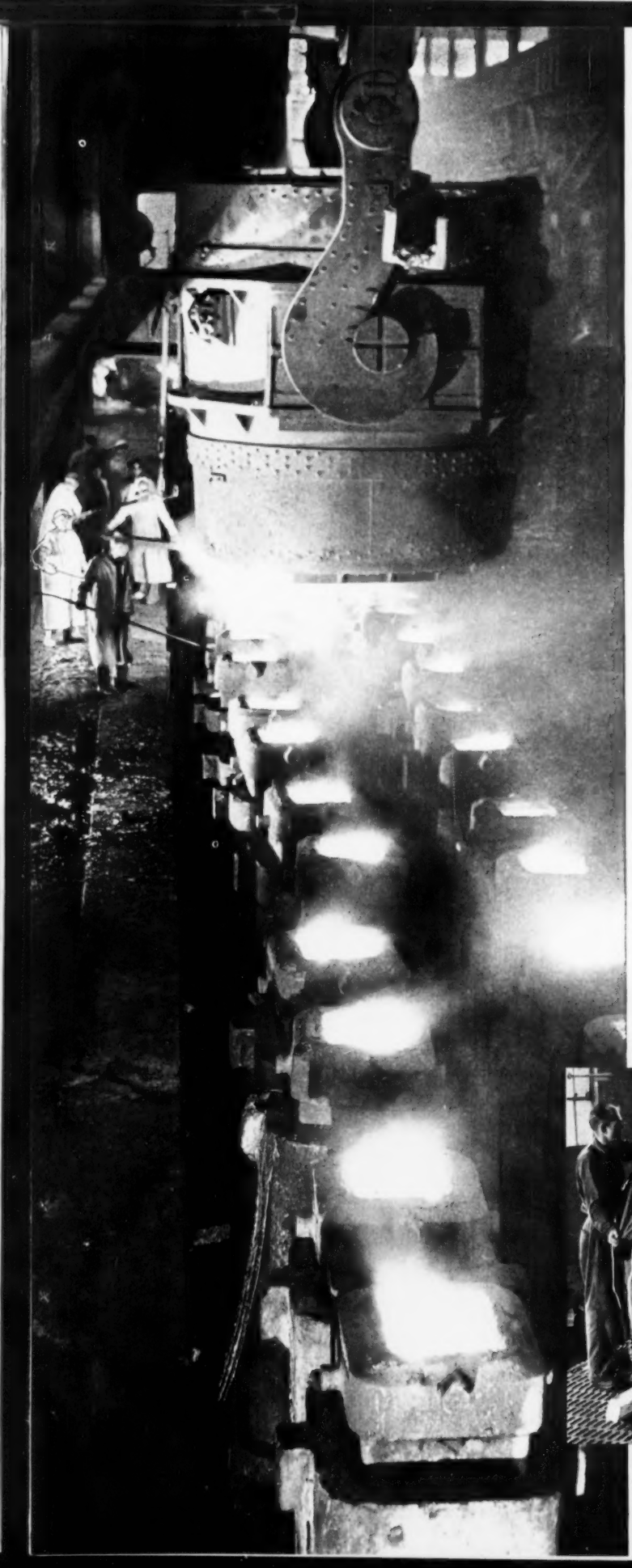
Automotive News reports that foreign car sales in the U. S. have amounted to 2.35 pct of the 1957 market. Projected, this becomes 150,000 units for the calendar year. This is a sizable market.

In 1956, foreign car sales amounted to 91,000 units or 1.53 pct of the market. In 1955, sales were only 51,600 units.

Production Plans — GM's decision to expand production at its Vauxhall and Opel plants was made long before the current foreign car boom in the U. S. Harlow H. Curtice, General Motors president, said: "Beginning in 1954, long range plans were undertaken by General Motors' foreign operations in England and Germany to serve the expanding markets for their products. These plans entailed an important expansion of their manufacturing facilities and the redesigning of their products."

Addition of the United States to

SMALL AND FOREIGN: General Motors will enter the small car field this fall by importing its Vauxhall Victor (above) from England, and the Opel Rekord from Germany. Both are made by GM subsidiaries.



How Great Lakes Steel *teems* quality

You're up on the catwalk above the pouring platform along the open-hearth pit at Great Lakes Steel. Right below, one of the giant 250-ton teeming ladles is filling another train of hot-top ingot molds.

At no step in the production of good, deep-drawing steel is control of quality more important than in the teeming operation. For defects can easily develop *unless* the entire pouring operation is done exactly right . . . the way it is at Great Lakes.

For example, these hot-top molds are designed to eliminate shrinkage cavities in the finished product. A special lining compound of graphite or tar blankets the inside of every mold to form a highly protective shield for the delicate ingot surface.

And that's only a sample of the care Great Lakes takes *every step of the way* to maintain high and uniform quality steel!

The easiest way to reach us? Simply phone our nearest representative.

GREAT LAKES STEEL CORPORATION

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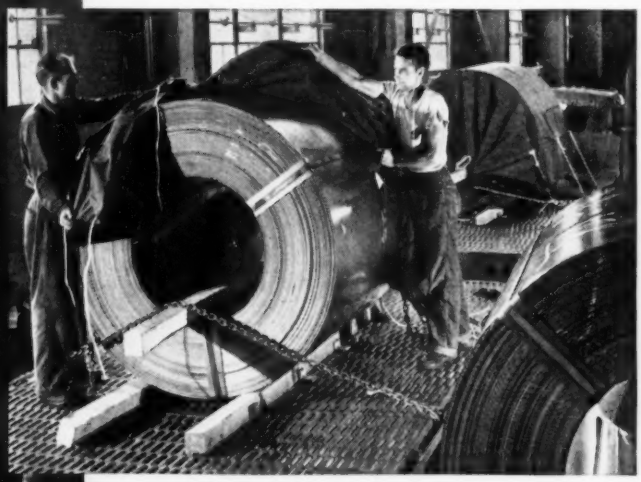
District Sales Offices: Boston, Chicago, Cincinnati, Cleveland, Grand Rapids, Houston, Indianapolis, Lansing, Los Angeles, New York City, Philadelphia, Pittsburgh, Rochester, St. Louis, San Francisco, Toledo, Toronto.



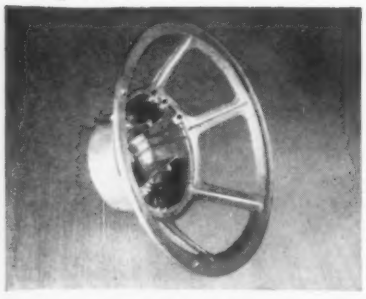
BUILT-IN QUALITY of Great Lakes steel is guarded through every step to final delivery. Here shipments of flat-rolled sheet coils are covered with tarpaulins for protection.

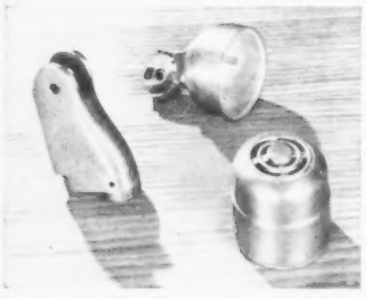
There's a Good Reason why **ZINC** DIE CASTINGS are so widely used

at *Electro-Voice*®

it's

RIGIDITY





Electro-Voice is outstanding in the design, development and manufacture of high-fidelity speakers and components in the field of sound reproduction. Its choice of ZINC Die Castings for these products was based on extensive research and intelligent utilization of valuable properties inherent in ZINC as a die casting alloy.

Replacing materials formerly used, ZINC Die Castings were found to give greatly increased RIGIDITY— an extremely desirable quality when heavy magnets and magnetic assemblies are used, as in the 15TRXB speaker shown above.

Electro-Voice professional quality microphones such as this 664 Cardioid Dynamic have used ZINC Die Castings for several years. Smooth finish, more efficient design and greater impact strength — as well as RIGIDITY— are the reasons for this choice of material.

Notice the ribbed structure of the speaker frame. Here are thin walls and strength where needed—RIGIDITY from every angle. For the Model 635 microphone, these polished die castings incorporate many of the advantages of ZINC, including labor-saving assembly.

Any die caster can show you other examples of improved products and lowered manufacturing costs gained by using ZINC Die Castings. Have you considered whether the same advantages can be incorporated in your products?

THE NEW JERSEY ZINC COMPANY 160 Front Street, New York 38, N. Y.

The research was done and the Zamak die casting alloys were developed with

HORSE HEAD SPECIAL (99.99 + % Uniform Quality)

ZINC

FOR DIE CASTING ALLOYS

Automotive Production

WEEK ENDING	CARS	TRUCKS
June 29, 1957	124,494	22,713
June 22, 1957	118,805	22,279
June 30, 1955	103,034	20,294
June 23, 1956	105,148	21,688
TO DATE 1957	3,370,528	574,920
TO DATE 1956	3,176,084	593,057

*Estimated. Source: *Ward's Reports*

the European and other markets currently served by Vauxhall and Opel was made possible by expansion of manufacturing facilities of Vauxhall Motors, Ltd., and Adam Opel, A. G., Curtice said.

U. S. Tooling Ordered—Facilities expansions at Vauxhall and Opel have boosted production capacities to about 250,000 cars and trucks each annually. Last October, while touring Europe, Curtice estimated Vauxhall production for 1956 at 126,400 units and Opel at 208,000.

Sources here revealed that GM ordered production tools and equipment at least 20 months ago. Two units, for the Vauxhall plant, are high-capacity automatic transfer lines designed for handling transmission cases and steering knuckles.

First for Overseas — The order was placed with Snyder Tool and Engineering Co. in the fall of 1955. These are believed to be the first such transfer lines to be built for any of GM's overseas plants. The transmission line has a reported capacity of over 100 cases per hour, making it the equal of anything in use in auto plants here. The case line has all horizontal working units, increasing its adaptability to changes in design. The steering knuckle line is palletized and is one of the few applications of transfer lines on steel forgings.

More U. S. Tooling—More new equipment built here and recently installed in the Vauxhall plant is a high capacity Universal Straight Line polishing line. This versatile line is quickly adapted to use on a number of parts.

Currently, it is being used to buff and polish right and left grille parts and the tail light bezel. Size of the line can be increased by adding units if demand dictates. This machine was ordered from the Acme Manufacturing Co. at about the same time as the automatic transfer lines.

While manufacturing plans were completed some time ago, all details for distribution of the cars in this country have not been fully worked out.

Distribution Plans—The Vauxhall Victor will be distributed through GM's Pontiac Div. while Buick will handle the Opel Rekord. First shipments of the two lines will be made to the North Atlantic Coast area, GM said. As availability increases, distribution will be extended to Pacific Coast markets, and finally to the rest of the U. S. This plan hits main areas of foreign car popularity first.

The Vauxhall Victor is a modern little four-door, four-passenger sedan. It features the unitized body construction, the same method employed by American Motors Corp. and its predecessors. An economical four-cylinder overhead valve engine develops 52-55 hp with a 92 cu in. displacement and optional 6.8-7.8 to 1 compression ratio. A GM test over 250 miles of "typical" British roads at an average speed of 35 mph returned nearly 35 miles per gal.

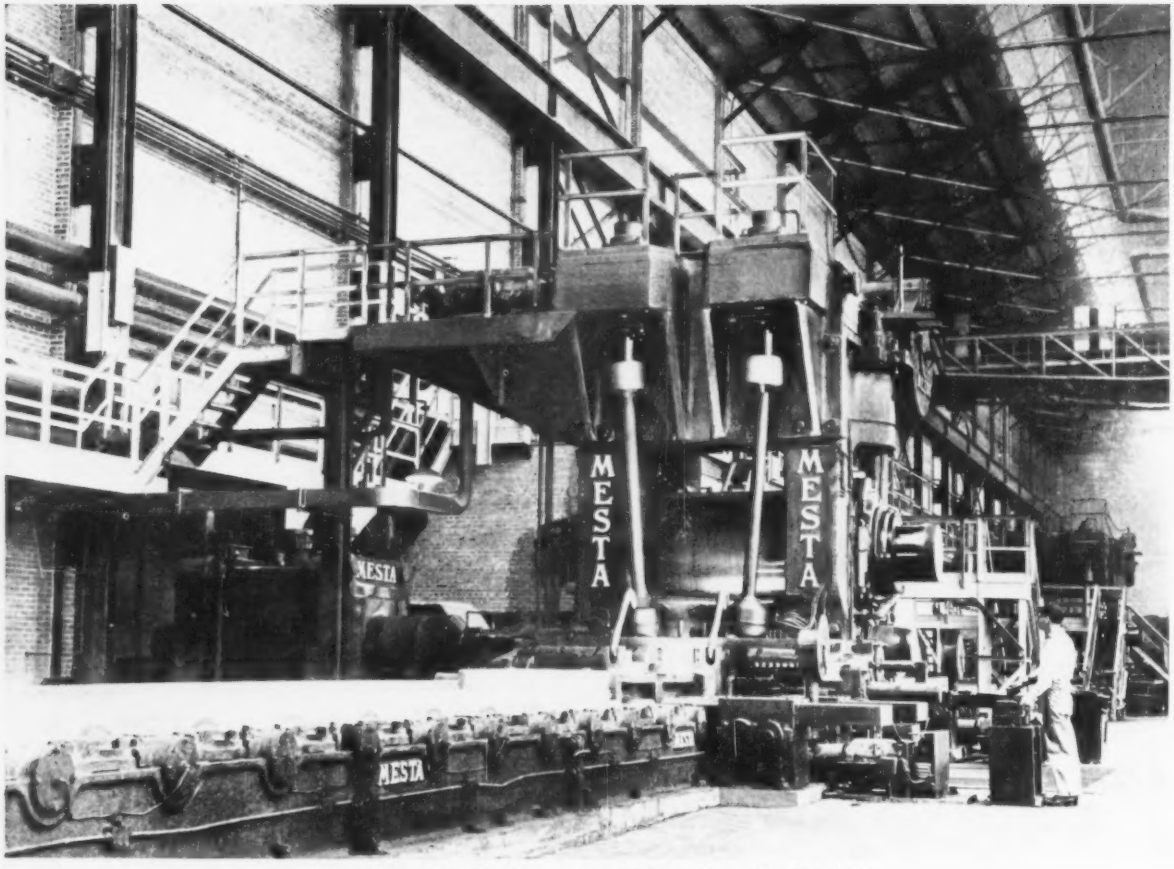
Size Comparison—Wheelbase is 98 in., compared with Chevrolet's 115 in. The car is nearly a yard shorter and a foot narrower than the Chevrolet, at 166.5 and 62.16 in. It is slightly higher than most 1957 American cars at 58 in.

Similar information is not available for the Opel Rekord as GM has said the car will be completely redesigned before it is introduced this fall. The current production model of the Rekord has about the same dimensions as the Victor but is lower powered with 45 hp.

Price Setup—Prices for the two cars have not been determined but are expected to compete with the Ford and Volkswagen imports with tags of $1539-$1739 and $1495-$2235. A recent $36 price hike sent the Vauxhall Victor price to $1394 in Britain, not including the 50 pct government tax.

THE BULL OF THE WOODS By J. R. Williams

THE BULL O' TH' WOODS IS OUT AN' THAT CALL'S FROM THE OFFICE, WANTIN' TO ASK SOME QUESTIONS ABOUT A JOB! THOSE GUYS ARE TRYIN' TO PROTECT HERMAN FROM BLABBING OFF ANY ANSWERS AN' GETTIN' IN DUTCH WITH THE BULL!
NO, THAT'S NOT WHAT'S WORRYIN' THOSE BIRDS-- THEY JUST DON'T WANT THE OFFICE TO THINK THERE'S ANYBODY HERE BUT THE BULL SMARTER THAN THEY ARE!
THE SILENCERS
J.R.WILLIAMS



Universal Roughing Stand on a Mesta 68" Continuous Hot Strip Mill

Under severest shock loads Texaco Meropa protects gears

Even under shock loads that may go over three million pounds, *Texaco Meropa Lubricant* protects reduction gears. This is because of special polar additives that provide the protective boundary lubrication needed at these critical moments to prevent scoring, ridging and scuffing of metal.

In addition, *Texaco Meropa Lubricant* embodies extreme pressure properties to assure smooth operation, with less wear, under sustained high pressures.

Texaco Meropa Lubricant resists oxidation and thickening . . . will not foam . . . will not separate in service or storage. It's the practical way to protect equipment and reduce maintenance costs.

There is a full line of Texaco Lubricants for all steel mill requirements. Let an experienced Texaco Lubrication Engineer suggest the right ones for you. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, New York.

TEXACO

TEXACO Meropa Lubricants

FOR STEEL MILL GEAR DRIVES

Cordiner Report Comes into Focus

How to Keep Skilled Men in Service

GE president's report on military pay has had less than enthusiastic reception from White House and military.

It's based on paying service men on what they can do, not years of service. — By G. H. Baker.

▪ Breaking into the open soon on Capitol Hill is a budding fight over higher pay for skilled military men.

Featured will be Eisenhower Administration spokesmen and a five-member Senate Armed Services subcommittee. At issue: Should the Defense Dept. adopt new pay policies entailing added expense for two years to achieve eventual savings of $5 billion?

Not from Pentagon—These savings were projected last spring in a special report on military pay. Ralph J. Cordiner, General Electric Co. president, headed the group that prepared the report to the Defense Dept. He forecast a net saving of $367 million by 1962, if the merit-pay plan were adopted this year.

Two factors particularly sharpen the interest of Congress in the Cordiner Committee findings. First, the report was not a Pentagon-bred gimmick to promote wage increases across the board. Fatter pay envelopes are intended to go only to the best-trained servicemen.

Next, the proposals get at the cause of armed forces' complaints that their best men are being lured into private industry. Congressmen have heard this ailment described at vast length; now some of them see in the committee findings a chance for a cure.

White House Skeptical — Since the committee report appeared, the White House has treated it warily, on the premise that more money for the skilled men would contribute to inflation. But the Senate group, with Sen. Stennis, D., Miss., as chairman, isn't expected to agree.

The senators will be especially anxious to learn if the Defense Dept. will back legislation to carry out the Cordiner Committee proposals. Defense Secretary Wilson's plan, revealed in May, for added proficiency pay for selected enlisted men, is not viewed by Congress as a complete answer to that question.

It's expected that the plan will be in for plenty of trouble from military traditionalists. It's believed that Mr. Wilson personally favors the plan, but hesitated to go all out in view of its highly controversial nature.

No Top Jobs for Businessmen in Capital

Consultants Only—Businessmen are no longer to be in charge of the U. S. Commerce Department's advice-to-industry offices.

Although the Eisenhower Administration still is urging business executives to take Washington jobs (no pay) for six-month periods, those who accept are being hired as "consultants." None will be allowed to head up any of the industry offices within the Department, as they have been doing up to now.

Conflict of Interest—It's not a question of money. The government pays businessmen in government nothing. (They're referred to in federal service as "WOCs" — without compensation.) It's a question of "conflict of interest." While the great majority of businessmen in government are completely honest and have shown neither partiality nor favoritism to any person or company, a few — unfortunately —have used their official positions to throw contracts to their friends.

Playing It Safe—Rather than run the risk of this danger, the Commerce Department now has decided it will play safe and confine businessmen to "consulting" roles.

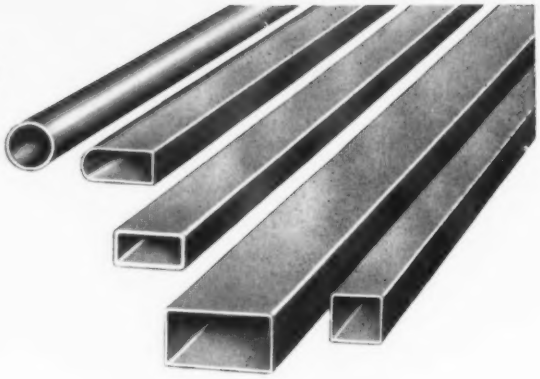
All policy decisions henceforth will be made by career government officials who will head up the 24 industry divisions.

Youth Needed—Send us younger men, government is telling companies that rotate their executives to Washington jobs.

The bureaucrats complain that many companies seem to have an unwritten policy of sending only men of near-retirement age. They send very few of their younger executives to Washington.

Government retorts that the young executives ought to give top priority to Washington for two reasons: (1) To learn more about mobilization preparedness; (2) To bring fresh and up-to-date industrial know-how to the slightly moldy halls of government planning.

Another Plus . . . from Brainard



Tubing:

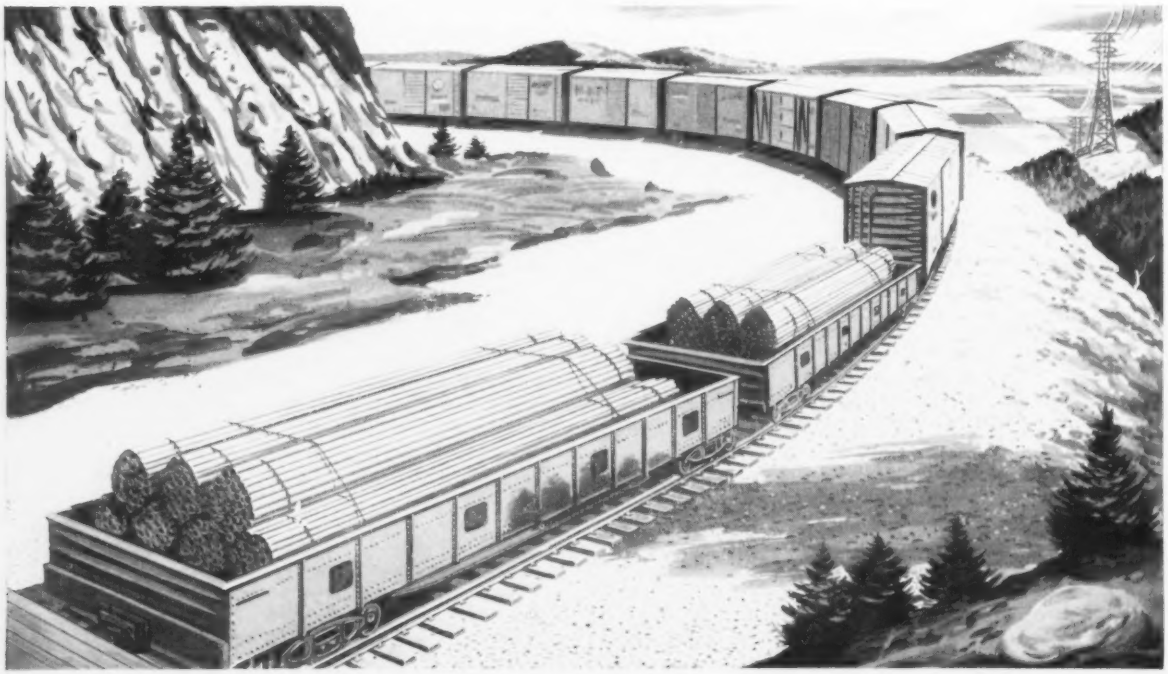
Assured delivery from an integrated mill...

As a buyer of steel tubing, what does the phrase . . . "from an integrated mill" mean to you?

To most of our customers it means just this: no company likes to have its markets jeopardized by production slow downs resulting from material shortages. When the "material" happens to be tubing and the supplier is an integrated mill such as Brainard, such shortages are virtually nonexistent.

As an integrated mill, Brainard is not dependent on outside material sources. The corporation of which Brainard is a part controls tubing production from raw material source to finished product: thus customers are assured of an uninterrupted supply.

So, whether you buy tubing in small quantities or carload lots, you can benefit from this year-in-year-out dependability of supply by placing your orders with Brainard.



Brainard Steel Tubing

SHARONSTEEL

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

Know The New Western Markets

A Checklist of West Coast Expansion

Here's a list of new metalworking firms moving out to the Coast or expanding there.

Most become new markets themselves in serving Farwestern industries.—By R. R. Kay.

■ If you want to share the Farwest's industrial growth, better start plans soon. If you don't, it's a good bet your competitor will.

All over the region new and expanding companies show up almost daily. They not only sell to Farwesterners, but become customers themselves. Here are some of the latest metalworking plants who will buy equipment, materials, and services:

Who's Who—Pacific Fabricators, Inc., Portland, Ore. — structural steel fabricators. Mid-Continent Manufacturing, Inc., Manhattan Beach, Calif.—aircraft parts. Assembly Engineers, Los Angeles—machine shop. Well-Bilt Aluminum Products, Pasadena, Calif. — door and window screens.

Kaiser Aircraft & Electronics Corp., Phoenix, Ariz. — electronic systems and equipment. North American Aviation, Inc.—expanding California facilities at Palmdale and Canoga Park. Abrasive Finishing Co., Venice, Calif.—metal finishing.

Big Foundry—Coquitlam Development Co., Port Coquitlam, B. C. —$1.2 million foundry for manganese steel castings. Adams-Rite Manufacturing Co., Glendale, Calif. —aircraft locks and controls.

Applied Research Laboratories, Glendale, Calif. — spectro-chemical instruments. Therm-Mite Boiler Co., Oswego, Ore.—boilers. Metal Slitting Co., Palo Alto, Calif.—metal cutting and slitting. Tepco, Inc., Sunnyvale, Calif. — ultrasonic testing components.

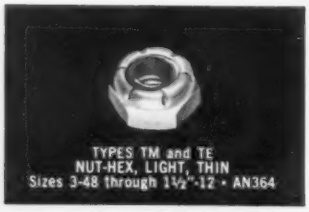
Baash-Ross Tool Co., Div. of Joy Manufacturing Co., Long Beach, Calif.—expansion for oil well drilling equipment. Hermo Manufacturing, Hawthorne, Calif.—tool and die work. Irving Marx Sheet Metal Co., West Los Angeles—fireplace hoods. Valor Electronics Co., Gardena, Calif. — electronic components.

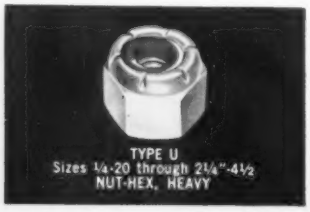
Market for Stainless—Cal-State Metal Products, Oakland, Calif.—stainless steel products. Fisher-Berkeley Corp., Emeryville, Calif. — electronic equipment. Consolidated Helicopters, Ltd., New Westminster, B. C.—jet helicopters.

Shroeder Manufacturing, San Pedro, Calif.—valves. A. A. McCray Co., Costa Mesa, Calif.—pumps. A-1 Carbide Cutter Service, Los Angeles—tool repair and maintenance. Western Concrete Structures Co., Inc., Gardena, Calif.— concrete construction.

UP ON EARTH: Final adjustments are made on a new vacuum wind tunnel at Rocketdyne, division of North American Aviation, Inc., Canoga Park, Calif. It will simulate flight conditions at extreme altitudes.

How does ESNA's complete line turn your special hex nut requirements into standard parts?


TYPES TM and TE
NUT-HEX, LIGHT, THIN
Sizes 3-48 through 1½"-12 • AN364


TYPE U
Sizes ¼-20 through 2¼"-4½
NUT-HEX, HEAVY

TYPE TU
Sizes ¼-20 through 2¼"-4½
NUT-HEX, HEAVY, THIN

TYPES M and E • NUT-HEX LIGHT
Sizes 1-72 through 1½"-12
AN365

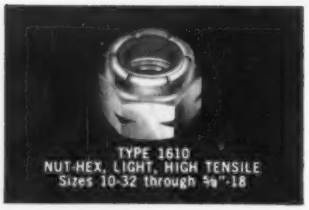
TYPE Y • DOUBLE HEX
FOR CLOSE CLEARANCES
Sizes 10-32 through ½"-20

The answer is: by manufacturing a complete line of hex nuts—that includes hundreds of dimensional, material and tensile variations.

For example, all the nuts shown here are standard parts. Yet they range in size from a sub-miniature 0-80 thread that is only .107" across the flats to a 4"-4 thread 6-1/8" across. Thread series include SAE, USS and British BSF, BA and Whitworth series. Most are available in carbon steel, stainless, brass and aluminum. They do not gall or seize bolt threads, and they can be re-used many, many times.

Furthermore, the effectiveness of their red locking collars has been proved by more than thirty years of rugged field service—on locomotives, pile drivers, oil drilling machinery, washing machines, trucks and tractors.

These standard ESNA hex nuts are available from stock or are produced under normal lead times. And, of course, hundreds of other "specials" are also available. For details on the Elastic Stop® nuts shown here, write Dept. N47-777.


TYPE 1610
NUT-HEX, LIGHT, HIGH TENSILE
Sizes 10-32 through ⅜"-18

TYPE 1660 MINIATURE
Sizes 0-80 through 4/48

TYPE 1260 • NUT-HEX, U BOLT
Sizes ⅜-24 through 1¼"-12
HIGH TENSILE

ESNA®

ELASTIC STOP NUT CORPORATION OF AMERICA

2330 Vauxhall Road

Union, New Jersey

TYPE NKM-NKE
NYLON CAP-LIGHT-HEX NUT
Sizes 6-32 through ½"-20

Tool Rental Rates Stir Protests

Small Metalworkers Charge Favoritism

Complaints center on "ridiculously low" rental rates. Claim large companies get break.

Congress and Small Business Administration may get into the free-for-all.—By E. J. Egan, Jr.

■ Small metalworking firms that rent few or no government-owned machine tools are squawking about the new tool rental rates set by the Office of Defense Mobilization. (The IRON AGE, June 27, p. 87)

Almost all of the complaints pouring into Washington boil down to these two points:

1. The new rates favor large companies. (Few small firms use government-owned tools).

2. Although renters of government equipment are supposed to cut prices on contract items to offset their lower tool costs, in practice this seldom happens. Instead, contractors simply pocket the difference.

The Arguments—Small company protests flooding into government agencies and Congressional committee rooms indignantly assert that the new rates are "ridiculously low." Congressmen hear that the government is destroying the incentive for a firm to own its tools.

ODM admits privately that the rates are "low," but only because the Defense Dept. insisted on them. Raising the rental terms, the Defense Dept. says, will mean recalculating nearly every contract now in force where leased tools are involved.

Urge Realism—A counter argument to this says that if the new rates are not realistic they should be changed. At least, it's pointed out, the Defense Dept. should start today to write more realistic rental figures into new contracts.

Small firms protest that they're caused extreme hardship by the Defense Dept.'s lackadaisical attitude. Moreover, they say that the Dept.'s stand for low rental rates is, in effect, putting the government permanently into the machine tool leasing business.

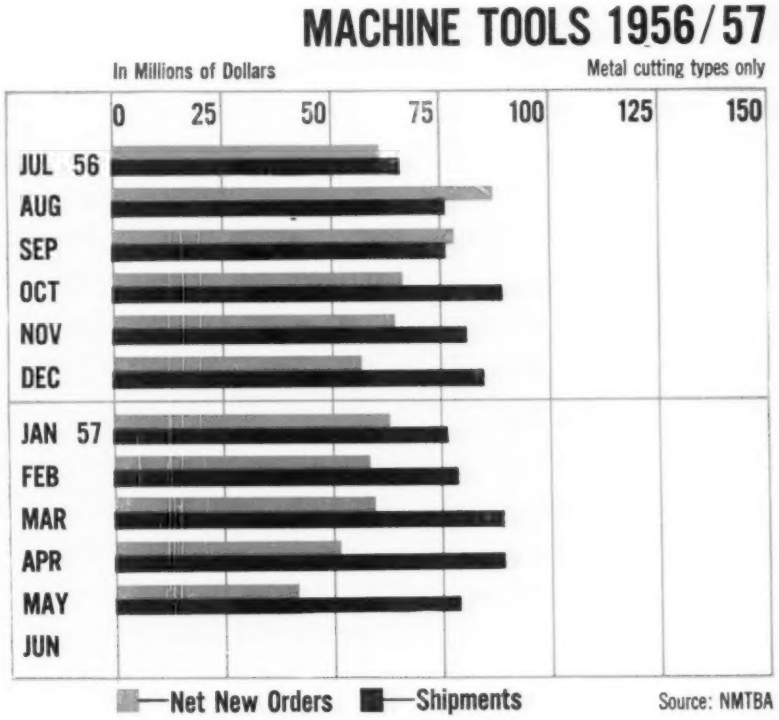
Brace For Fireworks — Watch for some fireworks from Congress and perhaps the Small Business Administration.

May Orders Drop

Net new orders for metal cutting machine tools dipped to $41.6 million in May, down almost $10 million from the previous month's total. For added comparison, net new orders in May 1956 added up to $87.1 million.

The drop was not altogether unexpected. Most industry leaders have been resigned to a downward trend in new business for the first half of the year. But they do expect an upswing to start sometime in the latter half.

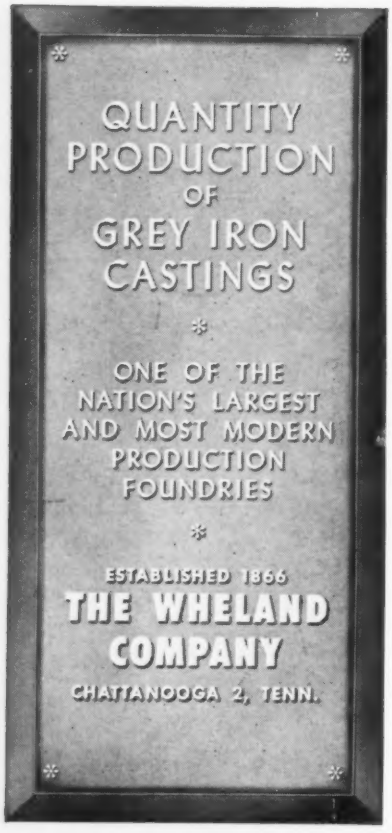
But Shipments Hold—In contrast to the new-order drop in May, shipments for that month held up well, totaling $78.7 million. As a result, the industry's backlog for metal cutting equipment now stands at 4.6 months, based on the current production rate. When the year began, builders had a 6-month backlog to work off.



INDUSTRIAL BRIEFS

Sunburned — Pittsburgh - Des Moines Steel Co. has a contract for a large Solar Furnace to be constructed at Cloudcroft, New Mexico, under the supervision of the U. S. Army Engineers for the Dept. of Defense. It will be operated by the Holloman Air Development Center's Air Force Base, New Mexico, as a research facility for the Air Force, Navy, Army, and other government agencies. It will also be available to private industry.

Twain Does Meet — Two steel companies in India have awarded the General Electric Co. contracts to build a total of about $2.1 million worth of industrial locomotives. The orders received from the Indian Iron & Steel Co. and the Hindustan Steel Co., reflect a current expansion of heavy industry in India.



Under One Roof—Minneapolis-Honeywell Regulator Co. has purchased from Raytheon Mfg. Co. for $4.5 million the latter's 40 pct stock interest in Datamatic Corp. Minneapolis-Honeywell now owns all the outstanding stock in Datamatic. Datamatic Corp. was organized jointly by Minneapolis-Honeywell and Raytheon in 1955 to engage in the development of large capacity high-speed electronic digital data-processing systems for office and business use.

Depression Pals — A special ceremony for the presentation of the one millionth Marathon electric motor made for Rockwell Mfg. Co.'s Delta Power Tool Div. also commemorated the 25th anniversary of a depression-born boom in the power tool business. Delta and Marathon Electric Co., Wausau, Wis., suppliers of Rockwell-Delta motors, have maintained a continuous association since the first sale in 1932.

Changes Noted — Greer Industries, Inc., manufacturers of Disogrin, a new urethane material, changed its corporate name to Disogrin Industries, Inc. In conjunction with this transition, its affiliation with Greer Hydraulics, Inc. has been terminated.

Branching Out—The Carpenter Steel Co. has opened a new mill-branch warehouse in Detroit to improve its service to users of specialty tool, stainless and alloy steels in the Detroit area and Michigan.

Canada to Caribbean — Associated Spring Corp., Bristol, Conn., will establish two new precision mechanical spring manufacturing plants, one in Montreal and the other in Puerto Rico. The Montreal plant will be operated by the corporation's Canadian subsidiary, The Wallace Barnes Co., Ltd., in Hamilton, Ont. The Puerto Rico branch plant will be the first precision spring manufacturing facility to be established in the Caribbean area.

Down But Not Out — Blast Furnace "A" at the Neville Island plant of Pittsburgh Coke & Chemical Co. was blown out. The projected work, scheduled to begin immediately, includes complete relining of the furnace, installation of new stove burners, additional rows of stack cooling plates, and a complete new gas cleaning system. Koppers Engineering & Construction Div. is the general contractor.

Inside Straight—Blaw-Knox Co. has received from the National Tube Div. of U. S. Steel Corp. an order for a Blaw-Knox Medart Multi-cycle type pipe straightener for installation at the Ellwood City Works. The No. 3 machine will handle pipe and tubing up to 4½ in. in diameter. Equipment will be produced at the Wheeling Works of Blaw-Knox Co.'s Foundry & Mill Machinery Div.

Carolina Calling — Wilmington, N. C., has been selected by Allied-Kennecott Titanium Corp. as the site for its initial multi-million dollar plant to produce titanium forgings and billets. The location offers low cost water transportation, a good supply of cooling water and ample skilled labor.

Strictly Instrumental—The Foxboro Co. will begin construction on a new addition to its instrument manufacturing plant at Foxboro, Mass. The factory building will house a receiving department and all machining and finishing operations. Storage facilities will be provided by a new warehouse. A new plant for Foxboro - Yoxall, Ltd., London, is scheduled for completion later this year.

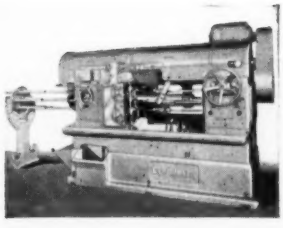
Month of Decision—Vitro Minerals Corp. has acquired a 30-day option to mine Shoni Uranium Corp. properties in the East Gas Hills district of Wyoming. Option gives Vitro the right to explore, develop and exploit a series of 51 claims, including the Jackneese and Blackstone claims and the Sage Hen lease.

First with NEW "Automatic" Service

Cone was the first builder of multiple spindle automatics to provide machine users with an experimental service in the application of carbide tools.

This service is a practical means of determining the possibilities of carbide tools for production men without loss or interference with their regular production schedules.

A pamphlet "FOUR STEPS WITH CONE" describes this service. Send for your free copy.

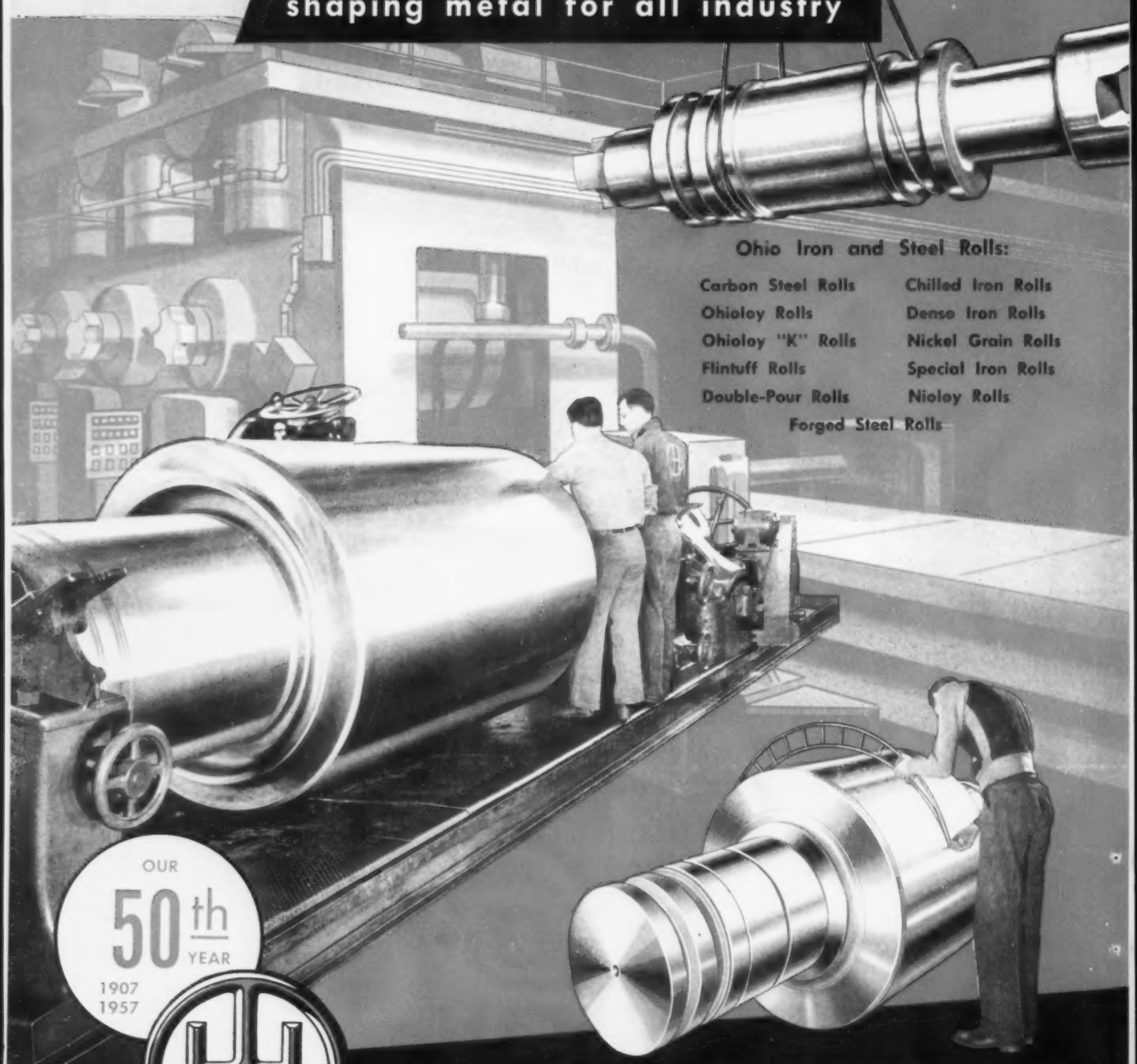


Conomatic

CONE AUTOMATIC MACHINE COMPANY, INC., WINDSOR, VT., U. S. A.

Ohio Rolls

shaping metal for all industry



Ohio Iron and Steel Rolls:

Carbon Steel Rolls	Chilled Iron Rolls
Ohioloy Rolls	Dense Iron Rolls
Ohioloy "K" Rolls	Nickel Grain Rolls
Flintuff Rolls	Special Iron Rolls
Double-Pour Rolls	Nioloy Rolls

Forged Steel Rolls

OUR 50th YEAR 1907 1957

THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO

Plants at Lima and Springfield, Ohio

OR13

E. P. Bullard, III, elected president and general manager, The Bullard Co., Bridgeport, Conn.

J. W. Keener, elected president, director and member of the executive committee, The B. F. Goodrich Co.

H. R. Rowland, elected vice president, wrought iron sales, A. M. Byers Co., Pittsburgh.

W. R. Ramsay, named asst. to the president, North American Refractories Co.

W. A. Lunger, appointed president, Ohio Chemical & Surgical Equipment Co.

H. L. McKee, appointed asst. to the vice president, Kaiser Metal Products, Inc., Bristol, Pa.

R. L. Smith, elected secretary and treasurer, The Frank G. Hough Co., Libertyville, Ill.; **F. M. Docauer,** elected asst. secretary; **F. O. Richards,** elected controller.

E. C. Bullard, elected chairman of the board and chief executive officer, The Bullard Co., Bridgeport, Conn.

G. A. Tierney, promoted to vice president, sales, McAleenan Bros. Co. of Pittsburgh; **A. W. Taylor,** named business manager.

W. W. Jones, appointed administrative asst. to the vice president, sales, Jones & Laughlin Steel Corp.

P. F. Bauder, promoted to asst. general sales manager, Marketing Div., Lewis-Shepard Products, Inc., Watertown, Mass; **A. F. Garbarino,** named division sales manager, hand equipment.

R. E. Lenhard, will become executive vice president, Air Reduction Sales Co.

W. J. Mongon, appointed manager, Marine Standard Products Dept., De Laval Steam Turbine Co.; **J. E. Gutzwiler,** appointed asst. chief engineer, Standard Products Dept.

H. C. Danforth, appointed manager, joint services, Transducer & Systems Divisions, Consolidated Electrodynamics Corp., Pasadena, Calif.

P. R. Shawver, named manager, Square D Co.'s Cedar Rapids, Iowa, manufacturing plant.

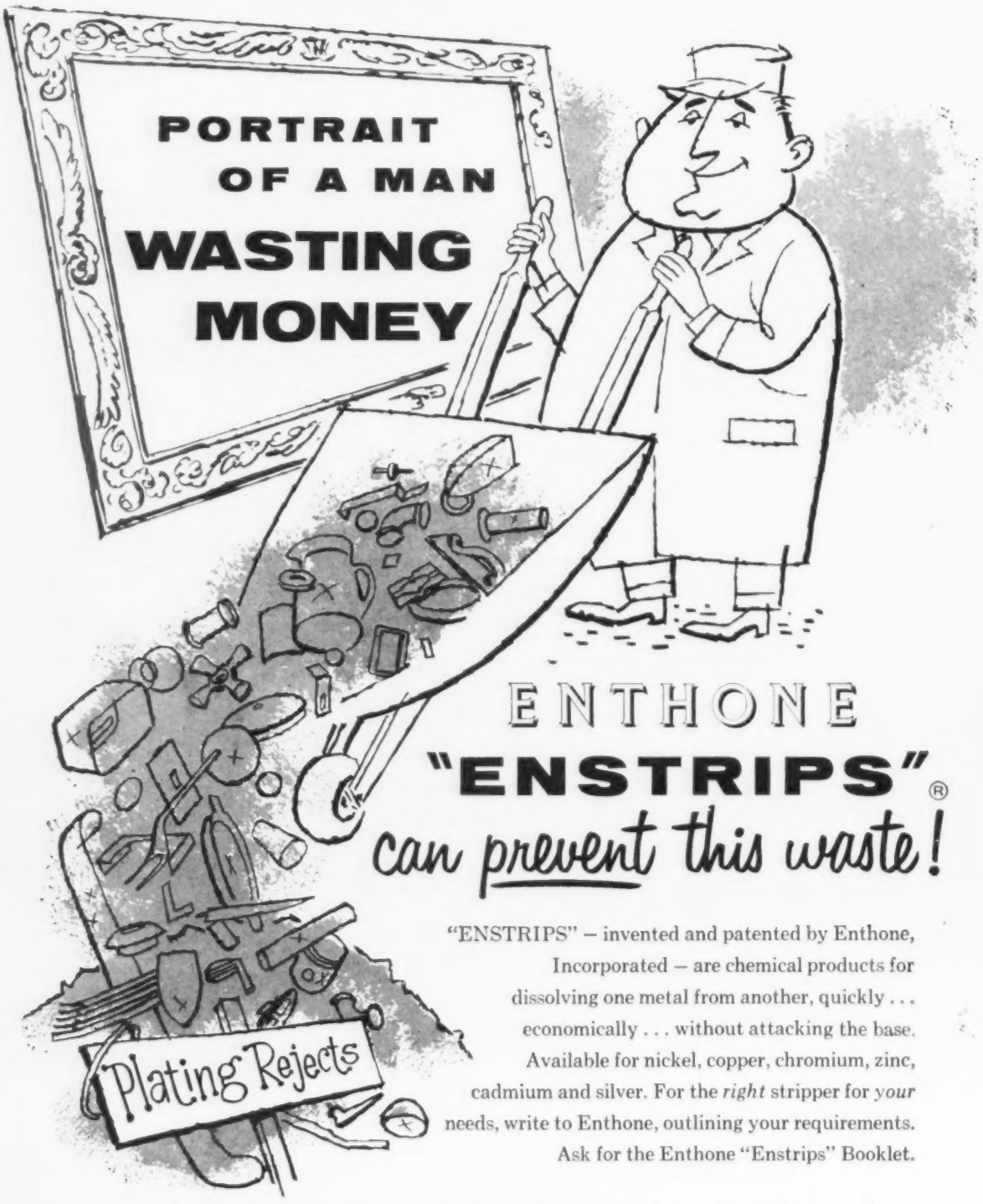
J. H. Greenaway, Jr., promoted to manager, operations, all plants, Johnson Steel & Wire Co., Inc.

A. S. Marvin, appointed chief engineer, American Bridge Div., U. S. Steel Corp.

T. H. McKoy, appointed Pittsburgh area salesman, Standard Steel Works Div., Baldwin-Lima-Hamilton Corp.

C. P. Maxson, named manager, customer service and relations, Standard Pressed Steel Co., Jenkintown, Pa.

J. A. Roemer, elected president, Reactive Metals, Inc. **F. H. Vandenburgh, Dr. R. E. Hulse, R. F. Coppedge, Jr.,** named vice presidents; **P. C. Jamieson,** named secre-



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gives parts like these high strength, toughness

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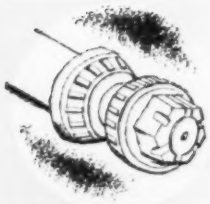
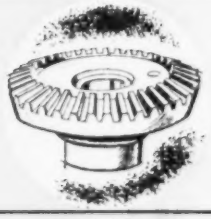
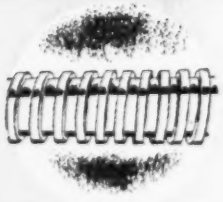
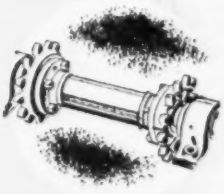








...AND YOU CAN MACHINE EVEN INTRICATE PARTS FROM HEAT-TREATED AND STRESS-RELIEVED BARS

Max-el 3½ is the ideal general-purpose steel for mining and construction shops. It has all the properties needed for rugged applications: toughness, strength, resistance to wear and impact. More than that, you can buy it from your nearby Crucible warehouse in heat-treated and stress-relieved bars — in the diameters and lengths you need — which do not require final heat treatment after machining.

Factors like these enable you to speed up repairs whether you make them in the field or in the shop. As a result, you cut down-time and repair costs — get your equipment back on the line faster. Then, too, parts made of Max-el 3½ last longer even on jobs where they're in continual rugged service.

Because of Crucible's methods of manufacturing and quality control, Max-el 3½ is made in extremely accurate sections and straighter bars, in a complete range of sizes and shapes. All Crucible warehouses carry complete stocks so that, in many cases, you get 24-hour delivery of whatever quantity you need.

Like more information? Write: *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Work with your AIM*... U. S. Reduction Company does...

Aluminum ingots unitized for safer, faster handling

An Acme Idea Man like Andy Bassi can help you solve product protection problems.

U. S. Reduction Company, East Chicago, Indiana, sought a way to keep unitized aluminum ingots from loosening or coming apart during handling and shipping. Working with their Acme Idea Man, a method of unitizing the ingots with heavy-duty Acme Steel Strapping was developed. (Idea No. U6-16)

Now, flat steel straps keep ingots tightly bound into a solid, secure unit. Output of unitized ingots per day is higher, handling and storage safer, easier. Units stay tight and secure during shipment. And customer complaints due to loose ingots are virtually non-existent.

***Work with your Acme Idea Man.** Profit from his help as U. S. Reduction Company does. He has an extensive file of performance-proved ideas that can help you save time and money, build greater customer good will. Write Dept. IFU-77 Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

tary and treasurer; **M. J. Devaney,** named asst. secretary and asst. treasurer; **W. G. Fetter,** named general manager.

C. H. Brewer, appointed head scrap purchasing agent, Republic Steel Corp.

A. V. Kelley, appointed sales manager, West Coast district, Nuclear Systems Div., The Budd Co; **Dr. W. E. Parker,** named manager, product research; **M. L. Dion,** named sales manager, Southwestern district.

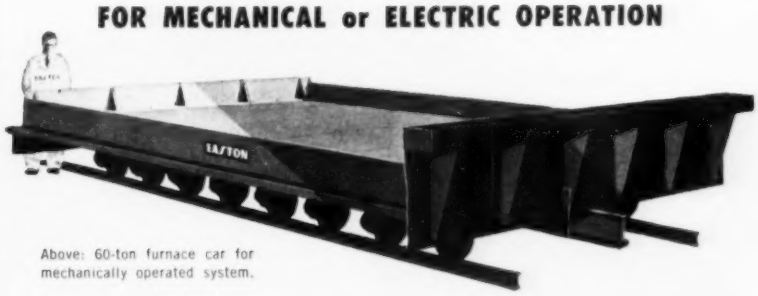
A. J. Winchester, named chief electrical engineer, Rolling Mill Div., E. W. Bliss Co.

J. Lawlor, appointed plant manager and **M. Rooch,** appointed production superintendent, aluminum foil processing plant, Belpre, O., Kaiser Aluminum & Chemical Corp.

H. J. Hauser, appointed asst. sales manager, Consolidated Machine Tool Div., Rochester, N. Y.,

Furnace Cars

FOR MECHANICAL or ELECTRIC OPERATION



Above: 60-ton furnace car for mechanically operated system.

CUSTOM-BUILT and quality-built for dependable service. Easton experience includes all types of furnace and transfer cars for modern heat treating systems. Built to any desired capacity.

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Write for Catalog . .

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5209 W. ARMSTRONG AVE. • CHICAGO 30, ILLINOIS

ALBERT SAUVEUR *was the first man in America to study steel through a microscope. In that way he noted the relative effects of temperature, amount of work, cooling rate and chemical composition on the grain size of both rolled and forged steels.*

From these studies, Dr. Sauveur was able to show that there was a certain critical temperature which, following hot work and slow cooling, yielded the smallest grain size. This brought immediate modifications in rolling and forging procedures which, until then, had been done at the highest possible heat.

Thus, in 1896, began researches into the working and heat treatment of steel which form the basis of our present knowledge of metallurgy. In almost every branch of this science, Albert Sauveur contributed useful and important knowledge. Harvard University describes him as "a founder of the science of metallography". For this, and his life's work as scientist, teacher and our first consulting metallurgist, his is a great name among steel makers.

Great Names in Steel Making #II

The same day Albert Sauveur first focused his microscope on a specimen of steel, a mill employee on the Monongahela was busy paddling heavy grease on the roll necks of a small hand mill. The grease, a fatty base material having a high melting point, had recently been compounded by The Ironsides Company, of Columbus, Ohio. It was called "Shield" and performed so well that the name "Shield" in time, became synonymous with satisfactory lubricants.

The work of steel makers and lubrication engineers has come a long way since then — from small, slow mills, greased by hand with a paddle, to today's four and five stand continuous mills requiring automatically applied lubricants able to support sustained mill speeds of 4300 fpm and pressures as high as 25,000 psi.

In this progress, Ironsides specialists have "teamed" with mill superintendents, lubrication engineers and rollers to solve numerous problems. To achieve a satisfactory roller bearing Shield, for example, it was necessary to develop a pumpable, water repellent, extreme pressure lubricant that was also free-running in order to minimize the enormous power consumption of modern rolling mills. The even tougher problem of producing a domestic roll oil to replace imported palm oil was licked by the development of Palmoshield.

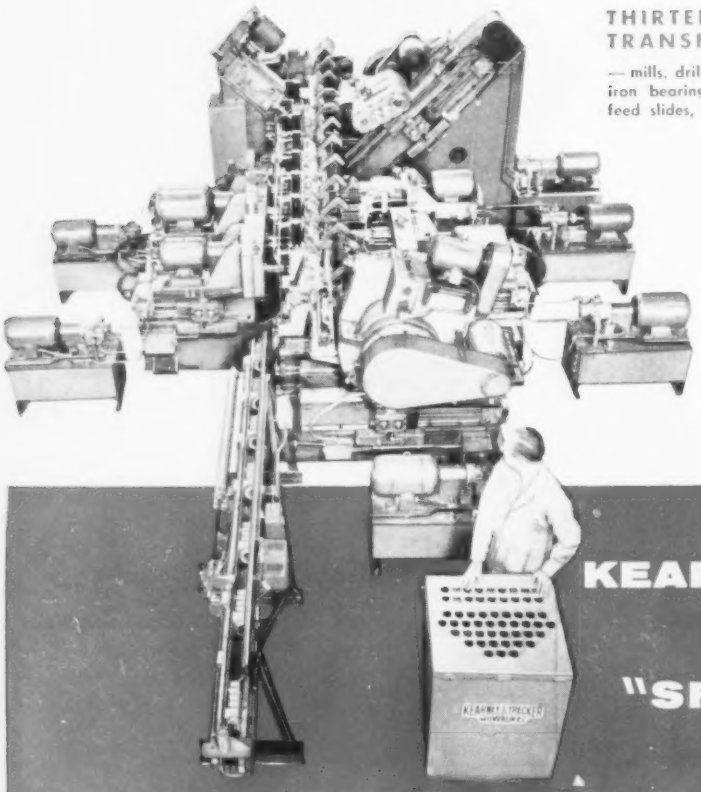
Ironsides engineers are equally accustomed to studying the problems of individual mills and compounding lubricants for specific conditions and preferences. These "custom tailored" lubricants are supplied in any quantity, from pails to tank cars.

Do you have such a problem—or an interest in improving present lubrication performance? A letter, or phone call, will bring one of our research engineers. The Ironsides Company, Columbus 16, Ohio.

Ironsides

By the makers of Palmoshield
"the palm tree that grows in Ohio"

Jos. MARGULIES.



THIRTEEN STATION AUTOMATIC TRANSFER MACHINE

— mills, drills, reams, spotfaces, taps and saws apart cast iron bearing cap blocks. Machine includes 5 standard feed slides, 9 standard production units.

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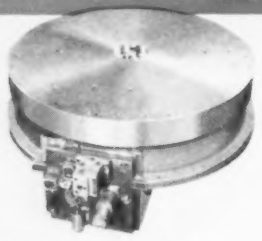

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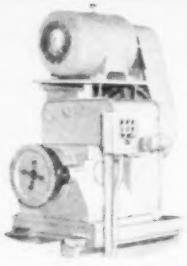

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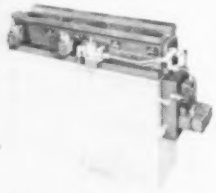

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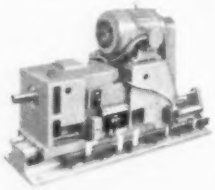

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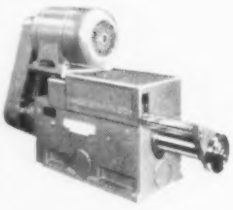

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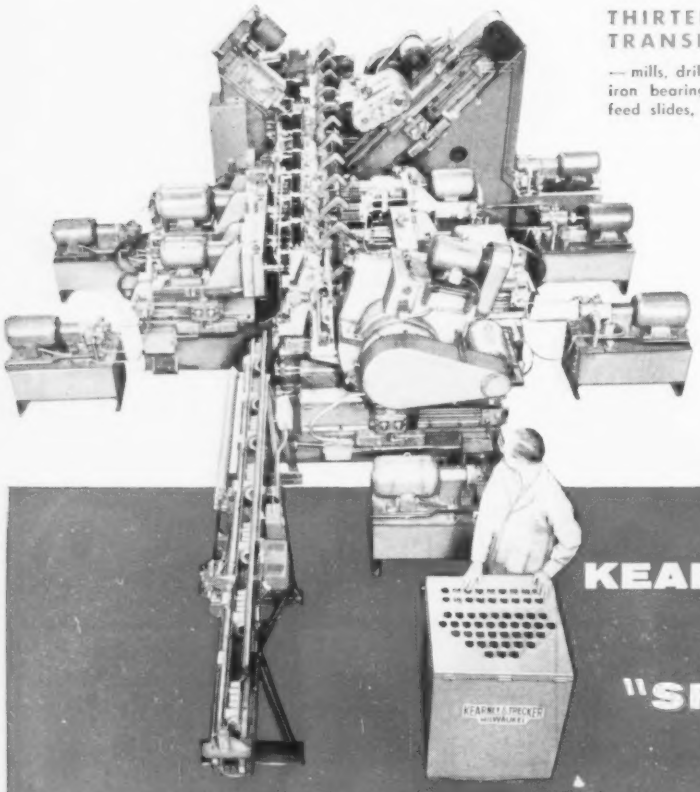

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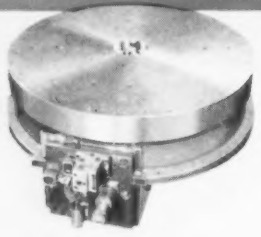

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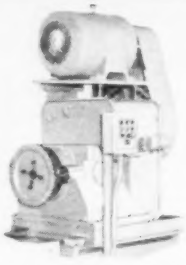

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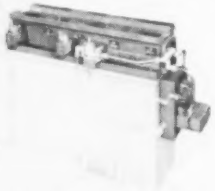

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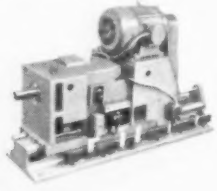

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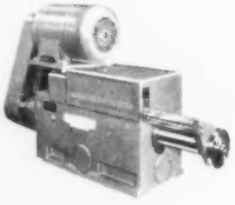

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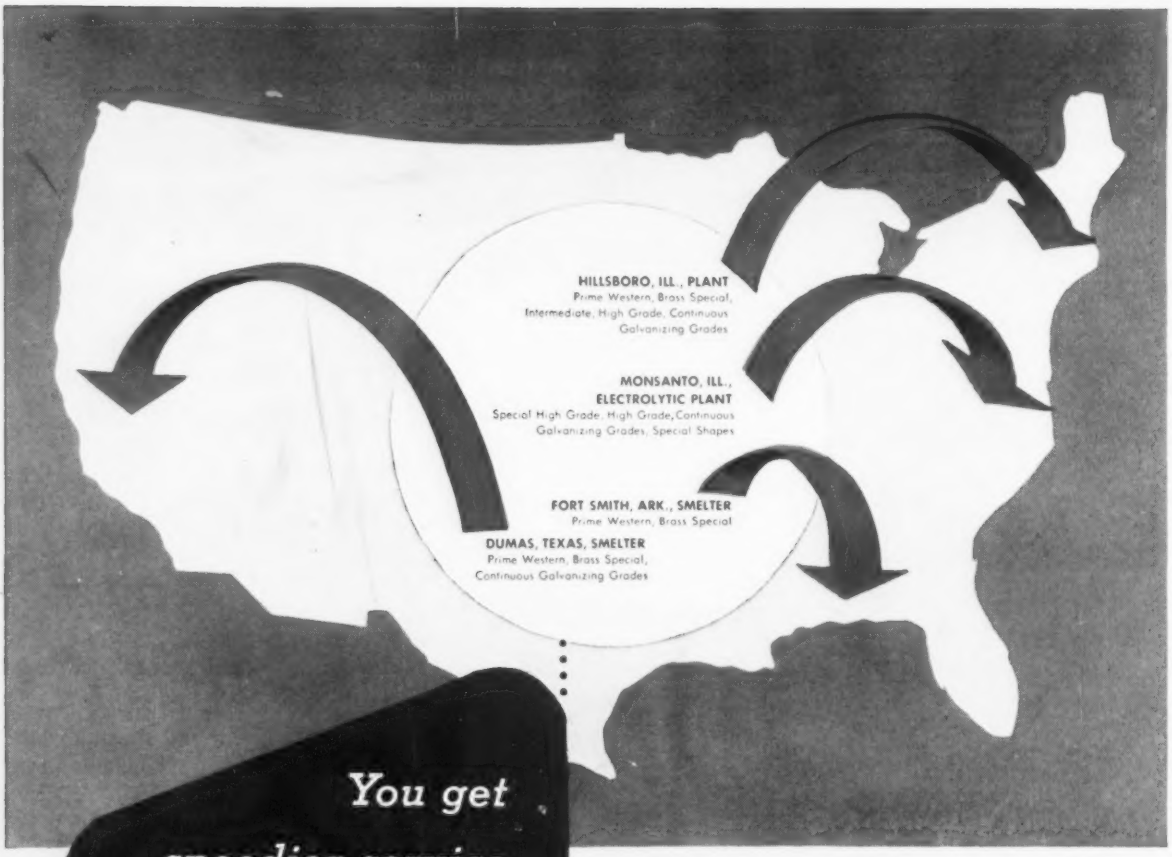
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How Defects Affect Tensile Strength Of Light Alloy Castings

By **Herman Mansfield**—Project Engineer, Wright Aeronautical Div., Curtiss-Wright Corp., Wood-Ridge, N. J.

Tests prove that there is a correlation between the X-ray quality of aluminum and magnesium castings and their tensile strength.

Why should this correlation be important to the light alloy foundryman? Actually, there are a few reasons. First, it'll help him get better quality. It'll also save him time and money.

▪ Castings of aluminum-base and magnesium alloys are prone to two types of defects. Aluminum base alloys often contain gas porosity. Magnesium-base alloys are susceptible to microshrinkage.

The occurrence of both types of defects can be minimized and, at times, completely eliminated. But, as foundrymen know, such perfection requires the optimum combination of foundry practices. And the optimum combination takes a lot of time and costs a lot of money.

Sets Standards—Such perfection, too, may turn out to be wasteful. It is seldom that the specific application requires that the casting possess perfect soundness. So it's up to the foundryman to decide when it's time to stop experimenting and begin production.

But what standard is the foundryman to follow in arriving at this decision? Frequently this question

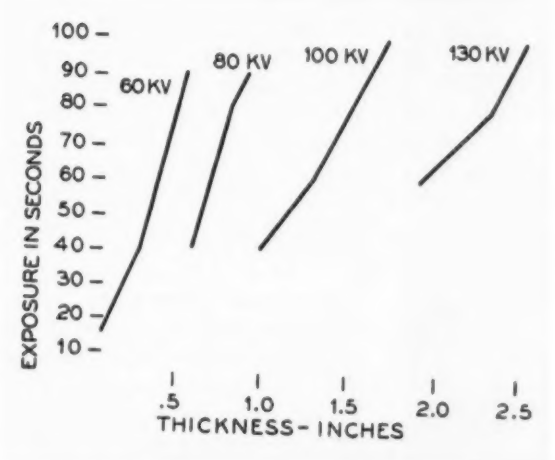

FIG. 1 (Above): X-ray machine settings for radiographing aluminum castings with current of 5 microamps.

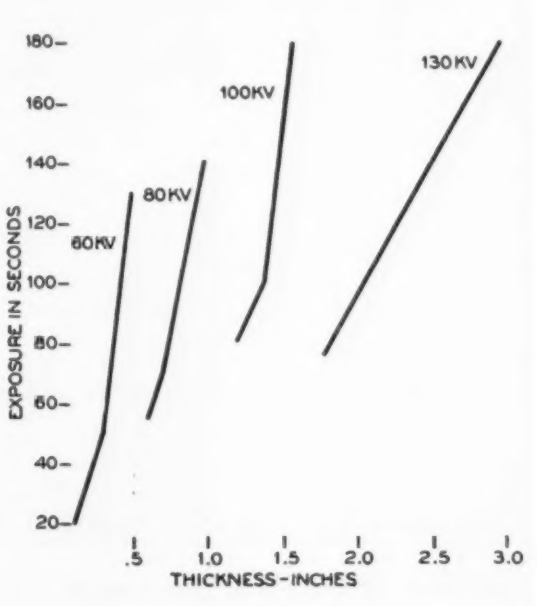

FIG. 2 (Right): With current fixed at 5 microamps, these X-ray machine settings were used for radiographing magnesium castings.

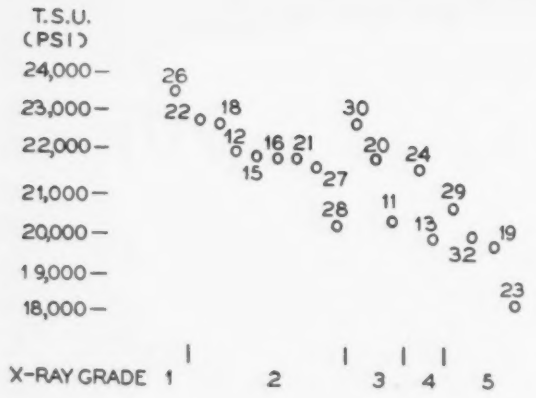

FIG. 3: Tensile strength vs X-ray grade of 18 specimens taken from aluminum casting of WAD 6345.

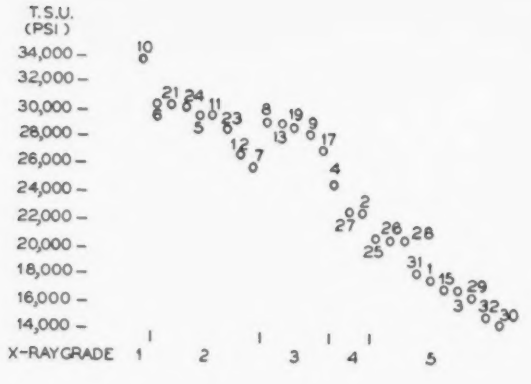

FIG. 4: Tensile strength vs X-ray grade of 27 specimens obtained from magnesium casting of AMS 4424.

is resolved by the acceptability standards set up by the customer's engineers. In any case, it is important that both the foundryman and the engineer know what properties they may expect in castings containing a given amount of imperfections.

Radiographic examination is the most common, and possibly the most reliable, nondestructive method of determining the amount of unsoundness present in castings.

Here's How—One proven technique for radiographing aluminum and magnesium castings can be applied to section thicknesses of 2.5 and 3 in. respectively. It employs a 140 KV X-ray machine, standard cassettes, and film development as per manufacturer's instructions.

Current is constant at 5 microamps. KV setting and exposure times are shown in Figs. 1 and 2. The distance between the film and the center of the tube is kept constant at 48 in.

Using this technique, the current test program was aimed at finding the answers to two questions. First: is there a direct relationship between the amount of imperfection found in a casting and the casting's ultimate strength? Secondly: if such a relationship can be shown to exist, how is the tensile strength affected quantitatively?

Alloy Variety—The alloys tested are among those used by the aircraft industry. They include AMS 4424, a magnesium-base alloy, and three aluminum-base alloys: AMS 4220, WAD 6344, and WAD 6345. The nominal compositions of these alloys are shown in Table 1.

In order to determine the effect of porosity on the tensile strength of aluminum alloys and the effect of microshrinkage on the tensile strength of magnesium alloys, all other variables were closely controlled. For example, each series of tests was conducted on one casting. This minimized differences due to chemical composition, pouring temperature, and heat treatment.

Careful Checks — Each of the castings used for the test was first X-rayed. Then tensile specimens were machined from the various parts of the casting which showed different degrees of unsoundness.

The finished tensile specimens were again radiographed to make certain that they contained imperfections likely to influence the casting's mechanical properties. Finally, the specimens were tested consecutively at the same machine setting.

Test results show a very definite relationship exists between degree of unsoundness and ultimate tensile strength. When X-ray quality is plotted against tensile strength, the results approach the typical quality distribution curve.

Five Grades—The plots for an aluminum alloy (WAD 6345) and a magnesium alloy (AMS 4424) are shown in Figs. 3 and 4. These plots are based on a five-step X-ray quality scale. Grade 1 denotes the best quality, and Grade 5 denotes the worst.

The points plotted do not fall on a line. They tend to fit in a band that is widest at the central, flat section of the curve.

TABLE 1 | **Nominal Composition of Alloys Tested**

AMS 4424 (AZ63): 6Al, 3 Zn, 0.20 Mn, balance Mg.

AMS 4220 (A-142): 4 Cu, 2 Ni, 1.5 Mg, 0.2 Cr, balance Al.

WAD 6344 (L-51): 1 Cu, 2 Si, 1 Ni, balance Al.

WAD 6345 (Mil-142): 4 Cu, 2 Ni, 2 Mg, 0.25 Cr, 0.1 V, balance Al.

Normal Distribution—This phenomenon reflects the normal scatter of points about a line of average. It is due to quality variations which are not discernible by means of radiography.

What is important, however, is not the individual tensile strength of a tensile specimen in a given X-ray grade. Rather it is the average line about which the individual bar test results scatter.

In Fig. 3, for example, it is true that test bar No. 30 (which falls in X-ray grade 3) has exactly the same tensile strength as test bar No. 22 (which is the best of X-ray grade 2). It is also true that the average tensile strength of the bars in grade 3 is lower than the average of the grade 2 bars.

Broad Application — Similarly, though individual bars of X-ray grade 4 may test higher than some bars of grade 3, the average tensile strengths justify the grading system.

This system is based on the quality distribution curve. The two ends of the curve are labeled grade 1 and grade 5, respectively. The flat central region is divided into grades 2, 3, and 4.

The results obtained with WAD 6345 are representative of results obtained on all aluminum alloys tested, with the exception that often the curve is not complete—either end being missing. This phenomenon is due to the casting's quality. Some sound castings have no area of X-ray grades 4 or 5.

Similar Effects—The tests appear to show that the effects of porosity in aluminum alloys are closely paralleled by those of shrinkage and micro-shrinkage in magnesium.

Prints from parts of the radiographs of test specimens are shown in Figs. 5 and 6. These demonstrate typical X-ray grades.

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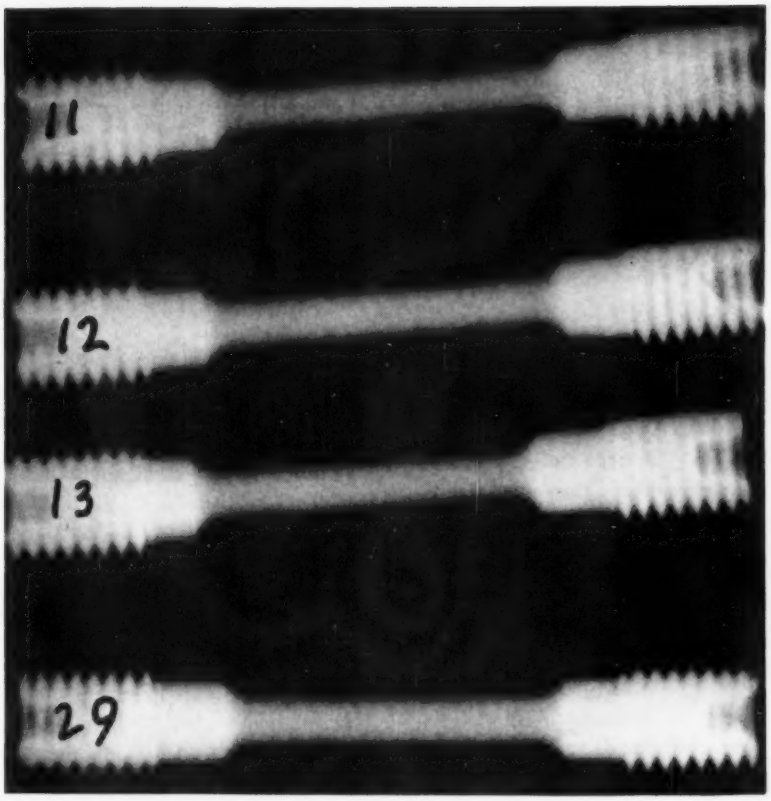


FIG. 5: Reproduction of part of radiograph of tensile specimens reported in Fig. 3. X-ray grades: 12-2; 11-3; 13-4; 29-5. (WAD 6345)

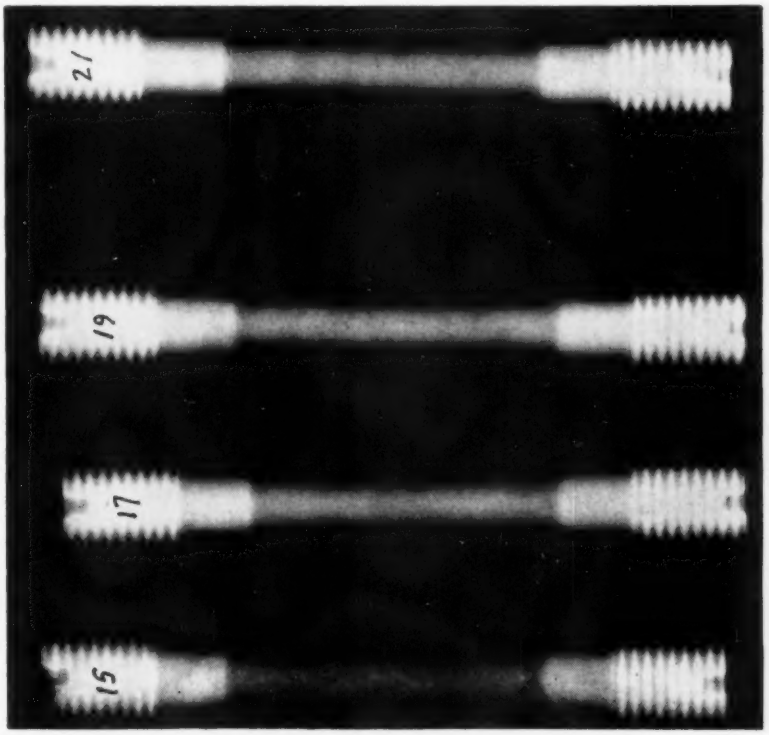


FIG. 6: Samples of radiographic quality of tensile specimens reported in Fig. 4. X-ray grades: 21-2; 19-3; 17-3; 15-5. (AMS 4424).

Oscillating Shear Cuts Angles In Coil Stock

By F. T. P. Plimpton, Jr.—Associate Editor

Wherever multiple handling is involved, you're almost certain to find a bottleneck.

This is especially true with sheet metal that has to go through a series of blanking and shearing operations.

Here's a neat little idea that grew into a big step-saver.

▪ Preparation of blanks from sheet metal means multiple operations. Material handling through shears and blanking presses is a headache, particularly in a plant with changing requirements.

At one plant, what started out as a simple improvement in one operation turned out to be a full-blown method of handling material from stock to blank sizes. It's the oscillating shear at The Budd Co., Hunting Park Plant, Philadelphia.

It started with the idea of adapting a shear so that it could be turned to cut angular shaped blanks from coiled stock. This would eliminate hand positioning in the shear.

But why not go one step further? Make the operation continuous by oscillating the shear automatically.

Mounts On Swivel — Take a standard (square) shear and mount it on a swivel base. Integrate this with automatic feeding and positioning controls. These are the elements of the oscillating shear as built for Budd by the F. J. Littell Machine Co., Chicago.

To complement the versatile shear, Budd engineers designed and built a stacking device. It eliminates sorting of blanks by alternate stacking into two stacking positions.

With the shear as a production tool, Budd has a wide choice of blank design. The shear will cut up to 35° angles at either end of blank.

The length of blank can range from 13 to 109 in. The shear handles coiled stock of 0.020 to 0.060 in. thickness and 18 to 72 in. width. Alternate positioning of shear eliminates waste of material.

High Production — Coiled stock goes through the shear at an average rate of 40 to 50 tons per hour. Depending on the length of blank, the shear gets up to 1000 to 1500 cuts per hour.

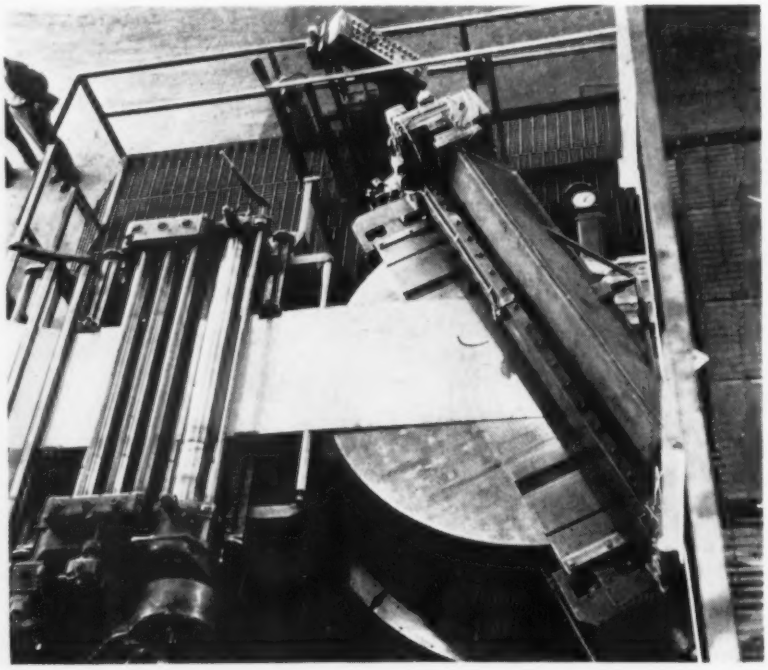
In evaluating the production effectiveness of the oscillating shear you must take into account that added shearing to get angular cuts is no longer necessary. Budd can design the blank to be cut in one operation.

Begins With Coil — A 20-ton overhead crane loads coiled stock on a hydraulic loading carriage. The carriage positions the coil over the spindle of the decoiling mechanism.

A hydraulic expanding device on the spindle keeps constant pressure as the coil unwinds.

A variable-speed direct-current drive controls the rotation of the spindle for diminishing coil diameter and for different lengths of blank.

Feeds To Length—The feeding and straightening device straightens the coil stock through a series of



SHEAR SWIVELS: Hydraulic system positions shear at preset angle in coordination with feed and shearing.

rollers. The last roll, or pinch roll, measures out the exact length of stock.

The feeding length is set on a dial. The accuracy of set is ± 1/32 in.

A servo mechanism controls the hydraulic feed transmission which drives the rolls up to 300 fpm. Average rate of feeding is lower because rolls stop during shearing. For instance, a 60-in. blank would feed at about 120 fpm.

Cutting Is Timed—The feed and shearing coordinate so that feeding begins as soon as the shear knife completes a cut. The shear swivels to the next angular position and is ready for action by the time material has been fed to length.

The automatic positioning system for shear angle features two hydraulic cylinders in the swivel base. Limit switches control the hydraulic system in positioning the shear. Alternate right and left hand positioning is done without delay in cutting.

Two dials on the swivel base control the cutting angles. Accuracy of angular positioning is to the nearest 1/4°.

Blank Clears Fast—The stacking device employs an electro-magnetic belt. In this unusual application, the magnetic belt accelerates the cut sheet away from the shear and brings it up to the speed of the double-conveyor belts.

Two air-operated lift bars hold the sheet off the conveyor belts until shearing is completed. Particularly in the case of large blanks, the lifting action cuts down on belt wear.

Stack Sorting — An air-operated door alternately selects blanks. The chute door opens to let a piece drop to the first stacking position. It closes to let the alternate piece pass via conveyor belt to the second stacking position.

When the stacking positions are full, the shear is stopped. Powered rollers quickly shift the stacks to unloading positions, both on the same side of the shear. Shearing resumes, as the stacks get strapped and are removed with overhead cranes.

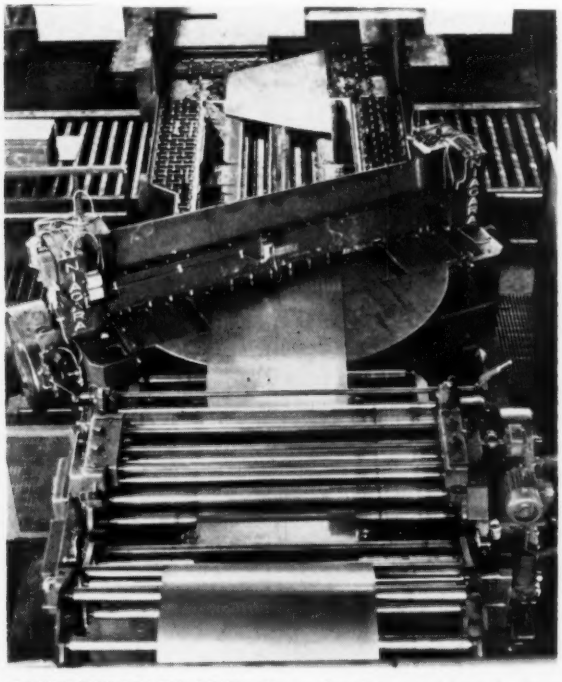
Continuous Cutting—When running through square-ended blanks, the chute door stacking permits continuous shearing. This is done by passing the blanks to one stacking position at a time. Shifting from one position to the other is done in the middle of the cycle so as not to interrupt shearing.

In starting an initial run, it takes 10 minutes to thread the coil from decoiler through feeding rolls and to set the shear and stacking device. After the first coil has been run, the spot welding technique comes into play.

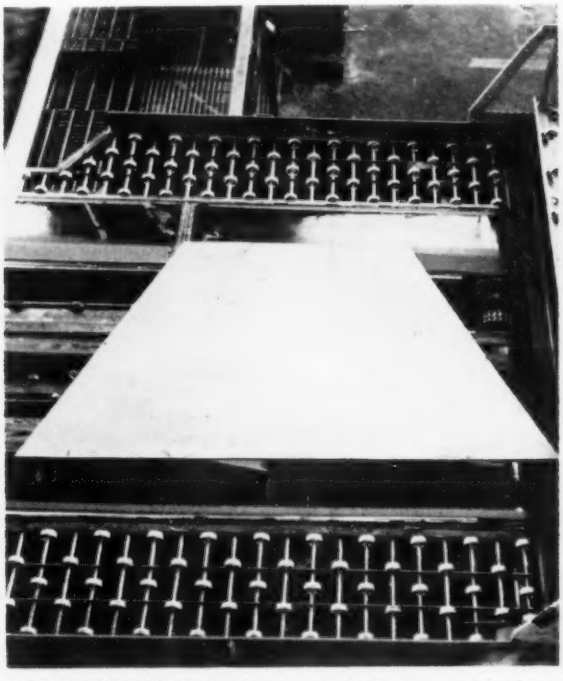
Electric spot welders, mounted at the site, join the new coil with the old. The end of the old coil draws the new coil into position. Instead of taking 10 minutes, the operators can do the spot welding method in as little time as two minutes.

Littell has built three oscillating shears for Budd Co. The latest, in operation since Dec. 1956, incorporates improvements learned in operation of the first two.

Experience to date with the new setup indicates that the improvements are sound and will contribute much to increased production.



OPERATION BLANK: From feed to stacking, in-line operation insures trouble-free shearing.



FAST SELECTION: Conveyer belts carry blank to chute door for selective stacking.

Shortcut to Long Runs: Heavy Duty Steel Rule Dies

By E. K. Scott—Accurate Steel Rule Die Mfrs., New York

Steel rule blanking dies are gaining new stature as tools of production.

Male-female types being made today rival the output of their conventional counterparts.

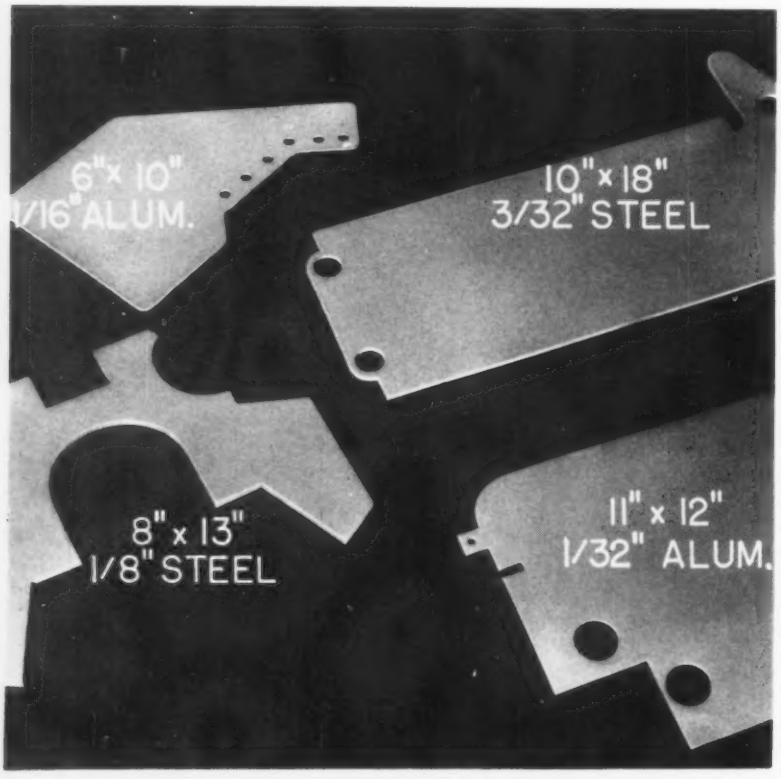
Production data shows that heavy duty steel rule dies may compete for use on large production runs.

Here's where they fit in best, and what you can expect to save.

▪ Despite widespread interest and publicity in recent months, steel rule dies have remained something of an enigma. Claims as to their stamping abilities have verged on the spectacular, but actual performance figures have been vague. The result is a rather confused picture of their real worth, and tends to obscure the fact that important advances are being made in this field.

Actually, steel rule dies have developed a long way from the simple "cookie-cutter" stage. Today they come in a variety of types, including male and female sets that provide the same shearing action as conventional dies. And where steel rule dies were once made only of light-gage ribbon steel for short-run operations, some of the male and female types now available are being built as sturdy production tools.

Production data assembled to date suggest that steel rule dies of the latter variety are best suited for (1) stamping parts to normal, instead of close tolerances; (2) parts with simple, rather than complex contours; (3) larger, rather than smaller parts; (4) thinner, rather than thicker metal. Any one of these conditions might be basis enough for deciding to blank on steel rule dies, if other factors don't boost costs out of sight.



SOME TYPICAL JOBS: Steel rule dies do quick, accurate and low-cost work in stamping a variety of contours from steel and aluminum sheet.

High Output—That heavy duty male and female steel rule dies can make large production runs is shown in Table I. The totals listed are based on production experience gained with Accurate A.D.M. male and female die sets. These figures are the minimum that can be expected; maximum life is unknown, because the dies haven't as yet been run to destruction.

The Table assumes standard, average conditions—shape, complexity of contour and number of cutouts are typical factors which can vary die output.

Blanking thicknesses given are by no means maximum. It's feasible to blank heavier material than is shown in the Table, but contours must be extremely simple. Even so, there'll be a reduction in the number of pieces the die will cut. This thickness limit doesn't apply to circular piercing of steel with holes up to one-inch diameter. The piercing process is the same as on conventional male and female dies, with

TABLE I How Long Will Steel Rule Dies Last?*

Maximum metal thickness, in.	Material**							
	Carbon steel	Stainless steel	Spring steel	Titanium	Aluminum	Copper	Brass	Lead
1/16	100,000	100,000	feasible	100,000	125,000	125,000	125,000	125,000
3/32	75,000	75,000		75,000	100,000	100,000	100,000	100,000
1/8	50,000	50,000		50,000	75,000	75,000	75,000	75,000
5/32					50,000	50,000	50,000	50,000
3/16					40,000	40,000	40,000	40,000

* Expressed as minimum blanking output. Maximum life unknown, as dies have never been run to destruction.

** In annealed or softened condition, where applicable.

corresponding parts incorporated in the steel rule dies.

Big Savings Cited—The costs of male and female steel rule die sets cannot be directly compared to those of conventional die sets. As part size increases, savings with steel rule dies become greater.

Steel rule male and female dies measuring about 3 x 4 in. cost from one-third to one-half the price of conventional male and female dies for stamping the same part. Steel rule male and female dies 32 x 34 in. may cost only about one-fifth as much as corresponding conventional dies. When the dies get quite large, say 3 x 6 ft, a plain shape may cost as little as one-tenth the price of a conventional die set.

A less tangible saving but one that can far exceed other benefits is the time factor. Conventional dies often take many weeks to build; heavy duty steel rule sets can be obtained in a few days.

Can Do Forming — Basically, steel rule male and female dies are for flat stamping only. Occasionally, however, simple forming can be combined with blanking to make bent up tabs, pimples or creases.

Flat-blanking steel rule male and female dies will stamp an almost unlimited variety of shapes. Generally, both contouring and punching can be done in one operation.

Two-stage dies are sometimes required, especially where pieces are close to each other or close to the outside edges. They can be made in mating steel rule sets.

Tolerances possible with steel rule male and female dies vary. At present, outside contours and inside irregular cutouts can be controlled accurately within plus or minus 0.015 in. However, methods are constantly being improved and closer tolerances are in the offing. On circular piercings dimensions can be held to ± 0.002 in.

No Limit On Size—The question arises as to just how large parts blanked on steel rule male and female dies can be. The answer is any size, subject only to press bed dimensions and press tonnage available. Parts shown in the accompanying photo have been stamped on presses of 200-ton capacity and less. Tonnage required on steel rule dies is roughly the same as for conventional male and female dies.

To date, steel rule dies of this type are being made with parallel shearing edges only. It's possible that in the near future they will be made with a bias edge as is sometimes done on conventional dies.

Dies that stamp more than one blank in a single press stroke require special attention. Individual blanks must be spaced on the die as indicated in Table II. This unit spacing applies only to stampings where the blank is freed from the stock. Precut blanks may be notched and stamped on corners without regard to these limits. Internal cutouts can be spaced very close to one another and to the outside contour of the blank.

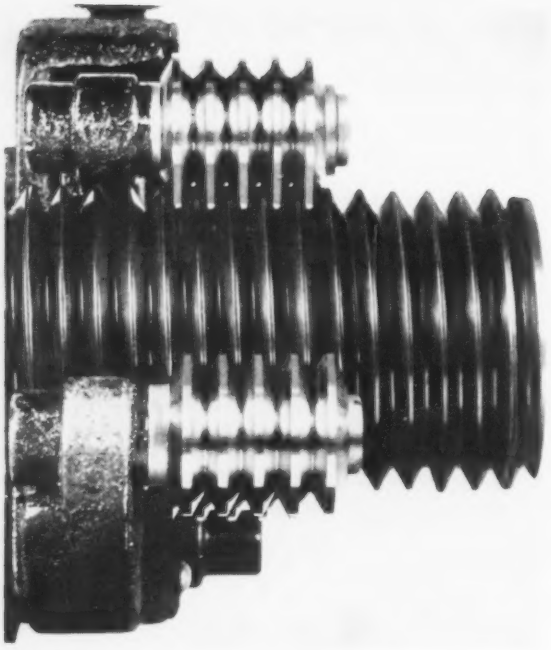
The production data above shows that steel rule dies are well on the way to becoming standard practice.

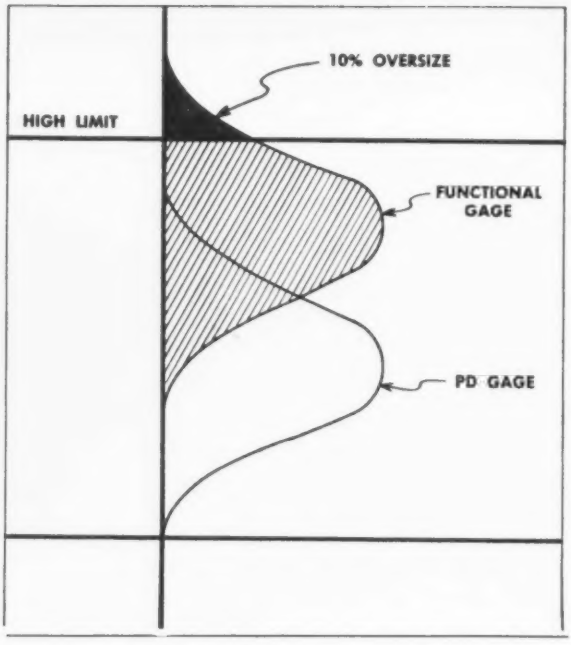
TABLE II

Spacing Between Blanks*

If stock is this thick . . .	Leave this much space between each blank
1/16 in.	5/16 in.
3/32 in.	3/8 in.
1/8 in.	7/16 in.
3/16 in.	1/2 in.

* Applies both to progressive die setups, and to multi-blank dies. Measure from outside contour to outside contour.





AT THE HIGH LIMIT: Gage must engage enough thread area to measure a true functional fit. By so doing, oversize fasteners will be detected. As the plot chart (above) shows, checking the high limit with only a pure PD gage would pass all the fasteners, even though 10 pct of them might be hopelessly oversize.

Are You Gaging Your Screw Threads Accurately?

Accurate thread gaging is really quite simple. Still, inspectors pass far too many wrong-sized threads.

Most of the trouble comes from using the right gage in the wrong place, or vice versa. This is how the job should be done.

▪ You may unwittingly be accepting misfit fasteners in your receiving inspection. Some commonly used (or perhaps misused) gages and gaging techniques actually pass undersize and oversize screw threads. Errant fasteners then show up on production lines as screws that won't fit tapped holes, or as sloppy, weak joints.

Yet there's no great difficulty in gaging screw threads accurately, according to Standard Pressed Steel Co., Jenkintown, Pa. The firm is a major producer of threaded fasteners.

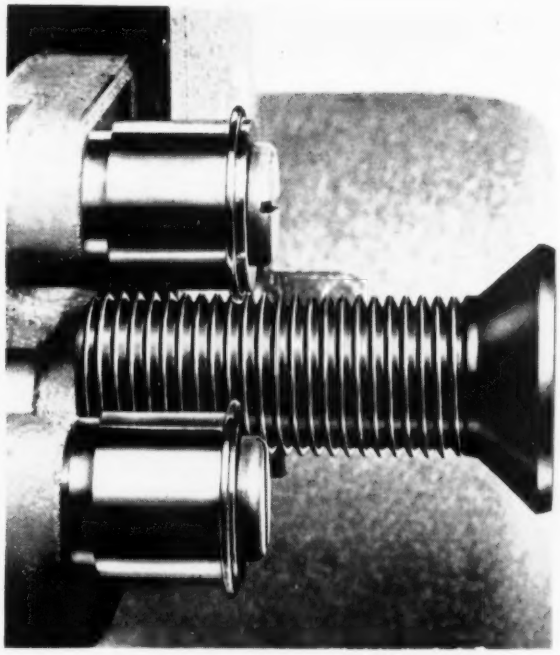
Use Two Types—All that's required, say SPS engineers, is to use two different and distinct types of gages for measuring screw pitch diameter (PD), which is the basis of thread fit.

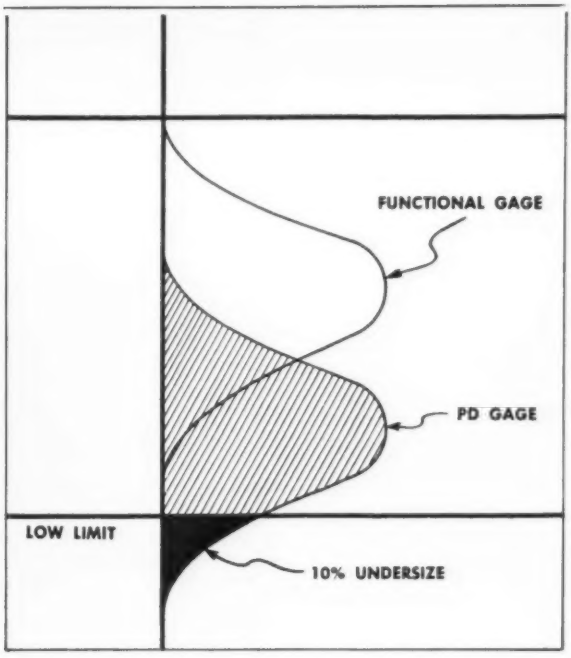
One should be a "functional" PD gage to check the screw against the high limit of tolerance. The other should be a "pure" PD gage to check against the low tolerance limit. Yet it's common practice in many plants to use only the functional type for both jobs—a set of "Go" and "No Go" ring gages, for example.

The high limit or "Go" gage should determine whether the screw will go into its tapped hole. Because it is a functional check on fit, it must measure more than the pure PD dimension. It must measure also the effective increase in PD inevitably resulting from lead error, angle error and other thread variables that are always present.

Catch Several Threads — Thus the high-limit gage should closely simulate the tapped hole by engaging a relatively large number of screw threads. If, instead, a pure PD gage is used, it's possible to pass oversize screws.

This is because the pure PD gage measures diameter over only a few turns of thread—ideally over only one turn. It is affected little, if at





AT THE LOW LIMIT: This is the place to use a pure PD gage, preferably one that measures the dimension over a single thread. As the plot chart indicates, using a functional (multi-thread) gage at the low-tolerance limit won't pick up undersize threads. Reason: it measures all the variables that increase effective PD.

all, by thread variables other than the pure PD dimension.

That's why this type of gage should be used at the low limit of tolerance to see whether thread size is below the minimum metal specification. A functional gage should not be used here since it is influenced by lead and angle errors and will give a proportionately high reading. It will pass undersize fasteners.

Several Good Ones—A number of pure PD gages can be used to measure at the low limit of tolerance. For critical gaging, however, thought should be given to the degree to which each type measures the pure diameter alone—unaffected by other thread variables or errors.

Most commonly used PD gages, short of the laboratory three-wire technique, actually engage two or even three screw threads. Only special gages with relieved ribs, or with special radius ribs, can be truly said to engage only one turn.

Tells Whole Story—SPS engineers also give a vote of confidence to the indicating or variable type of thread gage, particularly for use in plants that make their own threaded parts.

This instrument offers much more than a "Go" or "No Go" indication. It tells not only whether a piece is good or bad, but also by how much. Use of this type of gage at the threading machine points up any tendency for parts to drift out of tolerance.

Proper handling of thread gages can improve inspection accuracy and consistency. With fixed gages, such as a "Go" ring gage, don't twist the gage onto the screw or even turn the screw into the gage with a key or wrench. This may force through an oversize piece. Instead, hold the screw between two fingers and turn firmly into the gage.

Oil Plated Screws—It's also helpful to lubricate plated screws before checking them in a fixed ring gage. A light coating of oil keeps the plating from wearing off and gradually loading the gage threads.

Turning torque and loading are not problems with indicating or variable gages. In using these, though, the rolls or jaws should be checked periodically for end-play. Loose rolls fail to pick up drunken threads and produce generally inconsistent readings.

Moreover, don't spin a screw rapidly through a variable gage. The rapid motion may obliterate an out-of-tolerance flick of the dial indicator. Don't hand-hold long heavy bolts on a variable gage. Use a support to carry the outboard weight.

Check Entire Part—With either fixed or variable gages, remember to gage the screw throughout its length. The entire length of engagement must be within tolerance, not just the first or last few threads.

For setting and checking gages, SPS personnel recommend a highly sensitive and positive system. The first requirement is that set masters should be accurate to 0.00001 in. Second, a truncated set plug should be used to detect the most common and troublesome form of gage wear:

PITCH DIAMETER INCREASES: Graphs (right) show that lead and angle errors have a marked effect on functional thread fit. Regardless of whether they're plus or minus they increase the effective pitch diameter, indicate the need for both functional and pure PD gages.

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the notching of gage thread flanks by repeated gaging of screws.

The system also calls for fixed gages to be set first on the truncated portion of the plug, then moved to the full-form section to check for wear. If wear is present, the full-form section of the plug won't run into the gage.

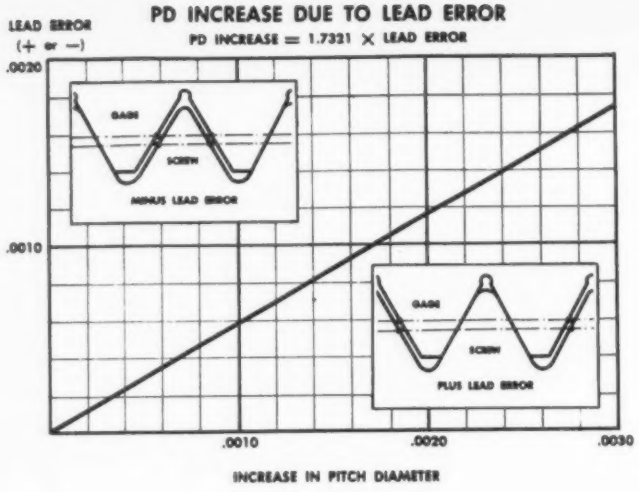
Judge the Wiggle—An alternate technique calls for setting the gage on the full-form section of the plug, then checking for wear on the truncated section. Because this is done by wiggling the plug to detect excessive play, the technique is more subject to individual judgment.

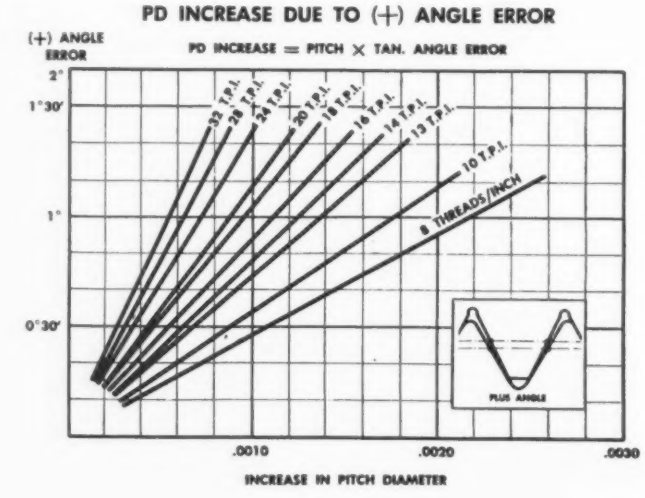
Either method can be used to set and check variable PD gages. Wear is not as critical here. But care should be taken to check end-play in gage rolls or jaws and to support long, heavy, setting plugs. With a pure PD gage, rotate the plug at least one-third turn and withdraw your hand before taking a reading. This gives the gage a chance to set.

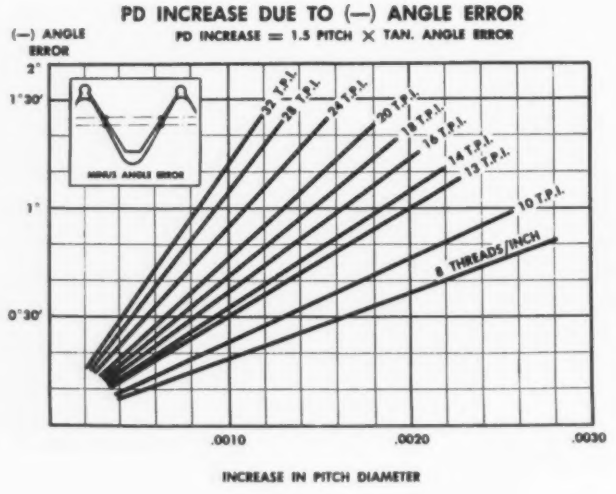
The PD of both truncated and full-form sections should be checked by the precision three-wire method. And all three wires should be measured carefully for size, taper and roundness before being used on set masters.

The best wire size is the diameter that permits the wire to contact the flanks of the thread at the pitch diameter. This minimizes the effect of angle error on the measurement being taken.

Sound thread gaging practice requires no tricky paraphernalia or particularly expensive equipment. Basic tools are readily available. The growing importance of thread fit makes it important to use the right tools in the right way.







Computer Speeds Paperwork in New Plant

Expansion in the form of a new plant or revitalization of an old one calls for a long look to the future.

Fast moving production lines can't get along with traditional paperwork. Engineering has to keep pace too.

This means bold use of new techniques to get efficient administration.

▪ The building of a new plant offers a challenge in incorporating the latest advances. Particularly so when the company itself turns out automation equipment.

Production line facilities are one area of modernization. Increasingly other areas are getting more attention. Take the case of this producer of automated machine tools.

The new Cross Co. factory and office building at Frazer, Mich. made use of its own know how in setting up the newest in production machines. But the center of attraction is the data processing department with its Univac high-speed electronic computer.

Stress on Data Handling — The data computer speeds handling of purchasing, scheduling and other records. Calculating and recording payrolls is routine work in streamlining office procedures.

The cost of renting the Univac equipment is repaid many times over in the quick handling of records of individual machine loads and shortage reports, as well as progress reports on orders. Cross also plans to take advantage of Univac to supply marketing data and to provide weekly reports on active inquiries.

Engineering Use — Arrangement of the engineering department is unusual. Each section operates as a separate unit for optimum performance. Cross plans to use Univac to cut engineering time on design of gears, cams, etc.

The two engineering sections A and B rate at ¼ million engineering hours per year. To keep up this rate, Cross maintains an engineering school which graduates 16 draftsmen per year. The Cross Engineering School cooperates with a Detroit engineering college in providing a continuous supply of engineering personnel.

Planned Production—The main part of the new plant has three 60-ft bays, each 700 ft long. Materials move from the front of the building through manufacturing and into assembly at the back of the plant.

Cross has set aside a special area for assembling and testing the sectionalized Transfer-matic machines. Some of these machines are 300 ft long. Floor space is sufficient to assemble as many as 15 at a time.

A new automatic assembly machine for cylinder heads is just being completed for a customer.

Reduce Lead Time—The building block concept in machine tools plus the company's policy of sectionalized automation has made it possible to plan for the most efficient production of automated machine tools. Cross expects the new facilities to make a substantial reduction in lead time.

The company had an annual volume of $15 million per year. The new plant should increase this to $25 million per year.

ELECTRONICS IN PRODUCTION: Data processing department forms the muscles behind efficient control of high production.

Integrated Line Hikes Diecasting Output

By W. G. Patton—Engineering Editor

It's always tempting to let small items of equipment fill those odd corners of the plant.

In this case they were brought together and integrated into a little production line.

Their efficiency and combined output increased to a surprising extent.

▪ A small diecasting machine can be made to produce a large number of parts—it it's teamed up with an efficient trim-and-pierce press, automatic polishing machine and specially designed racks for plating.

The relatively small ABC diecasting machine used at AC Spark Plug makes only five thimble-like castings per shot. Yet, production rates up to 300 shots per hr are possible.

The diecasting machine is backed up by a high-output, semiautomatic Bliss trim-and-pierce press equipped with air ejection. Next, castings are hopper-fed to an automatic polishing machine. Finally, special racks designed for fast loading and unloading take the parts through the plating line.

Five Benefits—Here are the net results of this nicely balanced operation:

Investment for dies and the diecasting machine is quite low.

Production per square foot of floor space is high.

Retooling cost in case of a design change is low; new tooling is confined mainly to casting and trim dies.

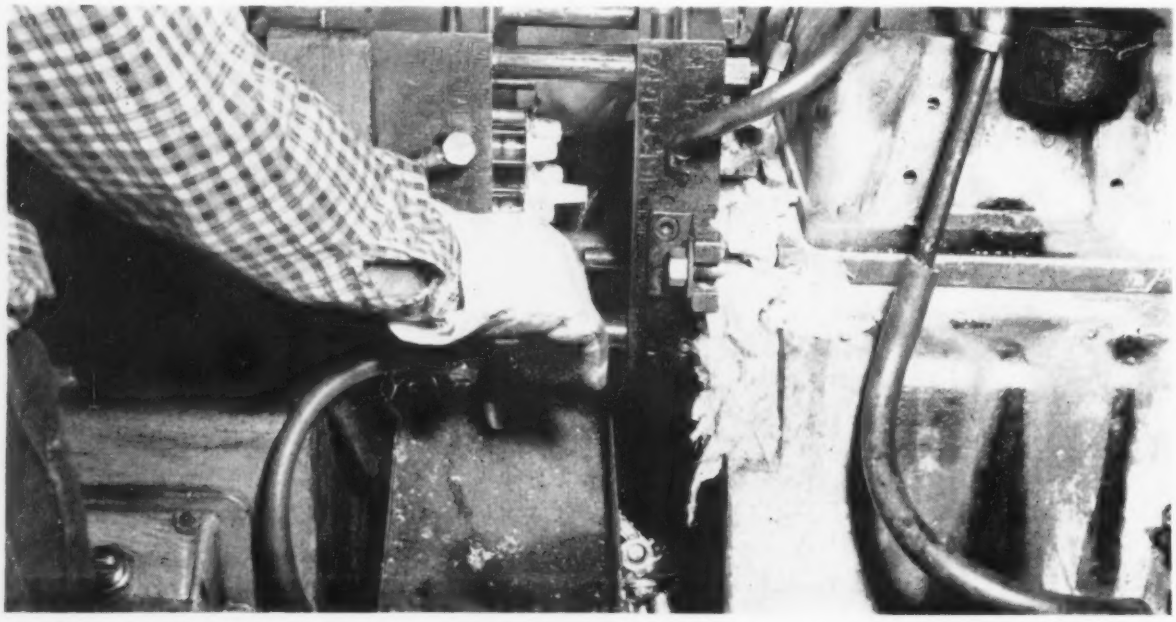
Quality of parts is excellent.

Value of parts in process is reduced by eliminating unnecessary manual handling and tote-box storage.

The part being made at AC is small zinc diecasting that weighs only 2 oz. Called a nacelle, it looks like an oversize thimble with an opening at each end. Four of these serve as instrument mounts on an auto dashboard.

AC's diecasting machine operates at a pressure of 60 psi. The operator presses two buttons to start the cycle. The plunger is air-operated, and the press is locked by a toggle arrangement. Die size is 10 x 10 in. Four ejection pins are used for each part and a single vent pin allows trapped air to escape from the casting.

Fast Flow — After the cast is made, dies part automatically and the operator flicks off the casting. It falls by gravity into a tote box.



QUINTUPLE CAST: Five nacelles are made in a single shot. Here, diecasting cycle has just been completed.

The cast is then carried in the tote box to the adjacent trim-and-pierce press, which trims off the flash and pierces holes in the nacelles.

An air blow-off takes away both the parts and the flash. Nacelles and the slug are blown to the left. Parts are trapped by bars and roll into a container, while the slug falls between the bars. Flash is blown off to the right into a scrap buggy.

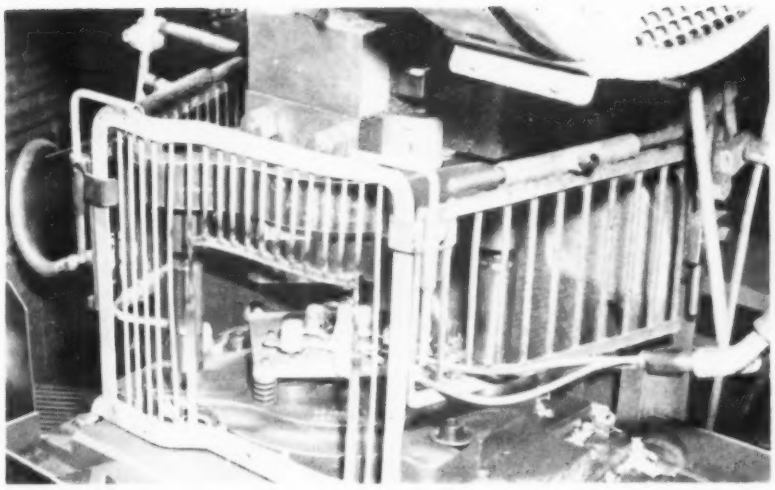
The next operation is polishing and buffing on an Acme machine. Nacelles are fed to it by a 26-in. Syntron vibratory hopper. Spindles on the rotating table turn at 200 to 300 rpm. As each spindle passes the escapement, a part is released mechanically and falls into position on the rotating spindle. After being pushed down securely, the part encounters the first of three buffing wheels.

Efficient Buffing — The three wheels are positioned to cover all outside surface areas. The first, a horizontal wheel, buffs the base of the casting; the second is placed at an angle to catch upper contours, and the third wheel buffs the top. Buffing compound is fed to the wheels automatically. When polishing is completed a cam release raises the part from the rotating spindle and a blower ejects it into a chute.

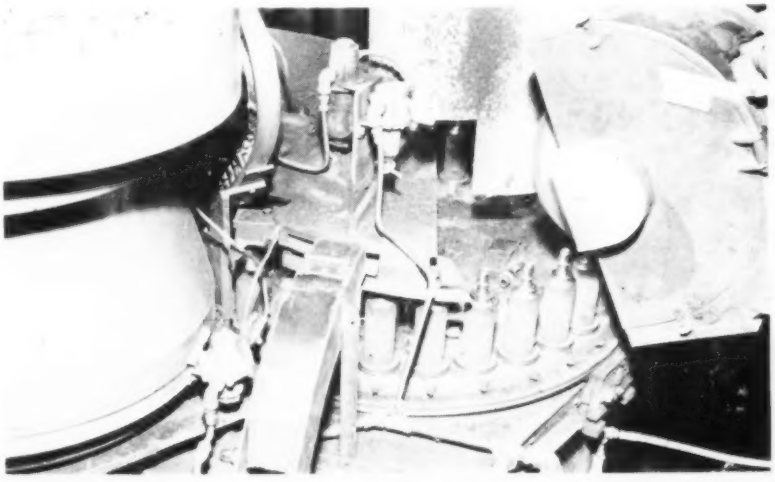
A special coated fixture equipped with springed prongs is used for plating. Each rack holds 56 parts. The prongs are forced together for loading. When all the prongs are loaded the fixture is released and the prongs spring apart, holding the nacelles securely during plating. Copper, nickel and chromium plating are applied.

As the racks come off the plating line they are placed in another fixture which squeezes the prongs and releases the finished parts.

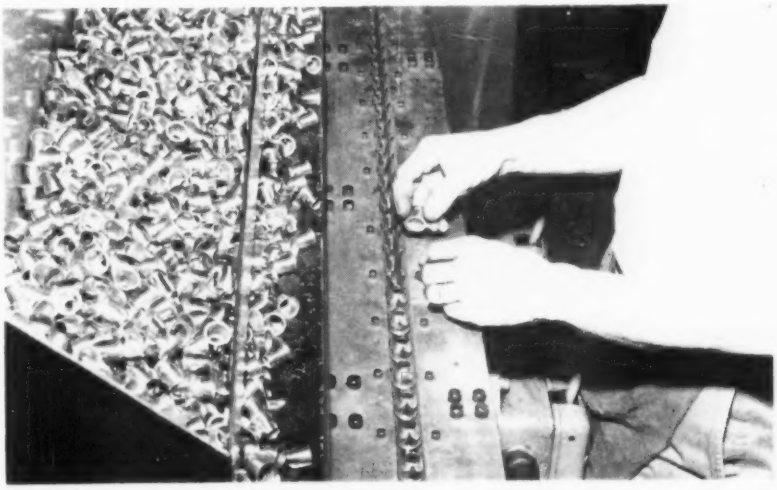
Cuts Handling—This integrated diecasting setup at AC Spark Plug is one of the first of its kind. The high production rates and relatively low investment required for the setup make it particularly attractive. Other advantages of the unit are reduction in manual handling and the elimination of tote box storage.



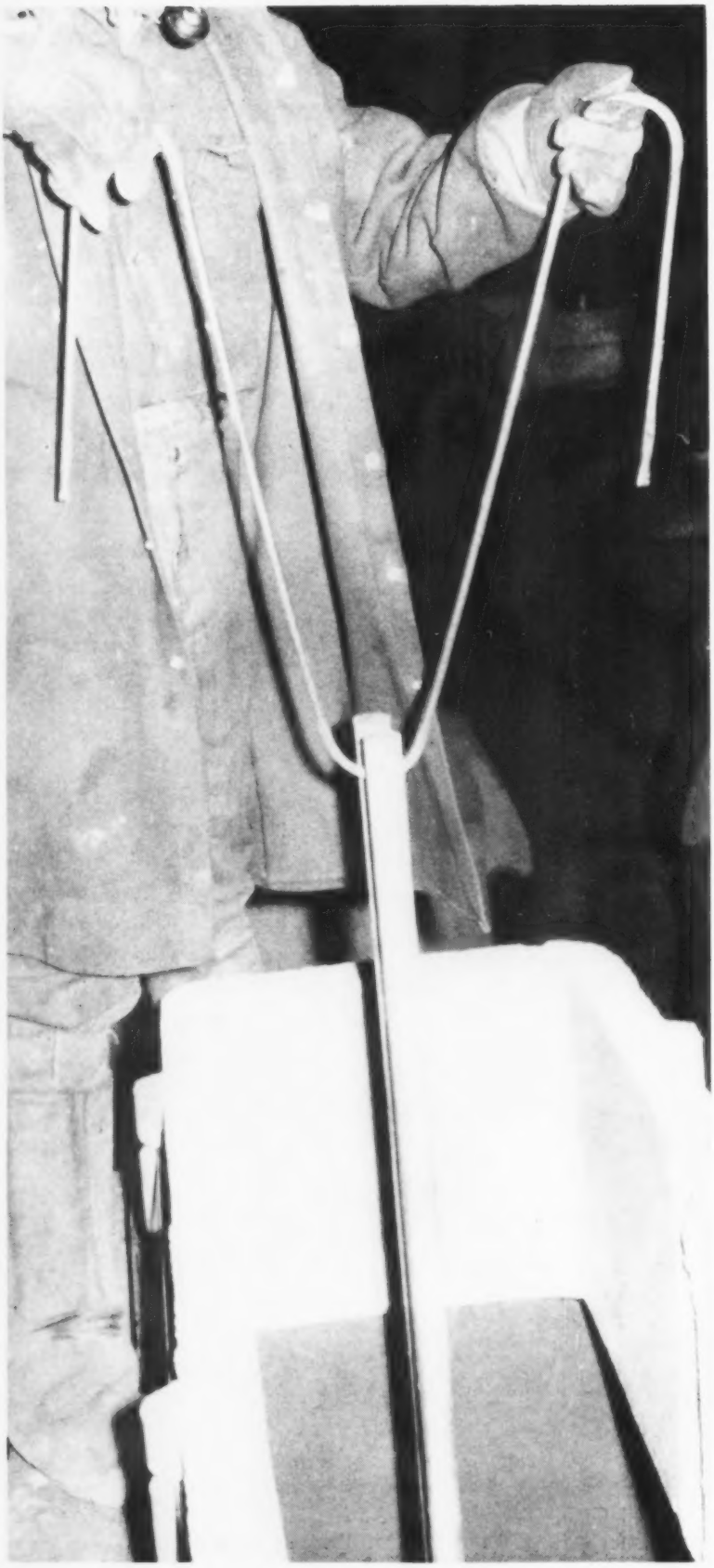
MOVE BY AIR: High-output trim-and-pierce press is equipped with air blow-off that sends parts and slug to the left, flash to right.



FAST FEED: Vibrating hopper, left, feeds nacelles to spindles of buffing machine. Three polishing wheels catch all contours.



SECURE GRIP: Special fixture holds springed prongs of plating rack together for quick and easy loading. Rack holds 56 pieces.



Special Bar

Here's a simple answer to one of steelmaking's knottier problems: an aluminum bar that melts below the surface where it'll do the most good.

It's designed to wash away uniformly as molten metal runs into the ingot mold.

Cleaner steel results.

▪ Aluminum-killed steel has long been one of the big headaches in steel production. The difficulty comes in keeping the aluminum under the surface of the molten steel long enough to do the oxidizing.

A new method uses a special aluminum bar to overcome the difficulty. The metal disperses evenly through the ingot during pouring and greatly increases yield.

Called Ex-Bar, the aluminum additive was developed and is being patented by Cleveland Electro Metals Co., Cleveland. Two Midwestern steel mills have adopted Ex-Bar as standard. Seven others are testing it out.

Improves Yield—In every case the use of Ex-Bar has resulted in a cleaner ingot. It boosts ingot to slab yield up to 5 pct and ingot to sheet yield up to 10 pct over that of prior practice.

In a series of tests, only 15 pct of the bloom had to be cropped, compared to 20 pct previously. Inclusions in test cuts were reduced from 100 or more to less than 10.

Residual aluminum, which is uniform throughout the ingot, is easily computed. It can be varied as desired.

SUSPENDED ON WIRE: Operator lowers Ex-Bar into hot-top ingot mold before pouring of metal.

Raises Killed Steel Yield

By R. G. Brown—Vice-President, Cleveland Electro Metals Co., Cleveland, O.

Over 70 pct of the original ingot is saleable as unblemished rolled strip, as compared to 50 to 60 pct by prior practice. Aluminum requirements are one third less with additional reductions in sight.

The thin longitudinal midsection is the major factor in the fast melting during teeming. The current output of Ex-Bar is in 3.0 and 4.8 lb per ft bars. The length of bar varies to suit ingot size.

Stable In Flow—With the bar carefully positioned in the mold prior to pouring, the narrow side of the bar faces the stream of molten metal. The shape of the bar causes it to act like a weather-vane and remain stable.

The lower end of the bar is 1½ to 3 in. below the surface of the steel. The agitation of the metal set up by the pour completely surrounds the bar end.

The aluminum washes away as fast as it is melted and readily diffuses throughout the ingot. This happens without any mechanical stirring. The bar melts completely.

No molten aluminum is apparent on the surface of the ingot. There is a corresponding reduction in the amount of scum.

Tests have been run for converting rimmed steel directly to killed steel in the ingot mold. It's done with the application of an amount of aluminum of approximately three times the desired residual. Further tests in this field are going on.

High Recovery — The efficiency of aluminum recovery by using Ex-Bar has increased from about 25 pct to over 70 pct. One of the keys appears to be the ability of the bar to melt with the speed at which the mold is filled.

The method prevents wasting and burning of aluminum, a common occurrence with prior methods. It's because the principal melting of the aluminum takes place below the surface of the steel.

The shape and dimensions of the bar contribute to the success of the method. In some instances, the rate of rise in the ingot mold varies substantially from mills where the original development work was done. In such cases adjustments corresponding to the pour rate are made by changing the cross section of the deoxidizing bar.

The Ex-Bar method is finding its way into new fields. One is in converting any portion of a rimmed heat to killed steel. The preliminary results obtained have been uniformly good.

A second is in the tool steel industry where steel production in electric furnaces means a substantially lower ingot weight compared to the weight of regular open hearth type ingots.

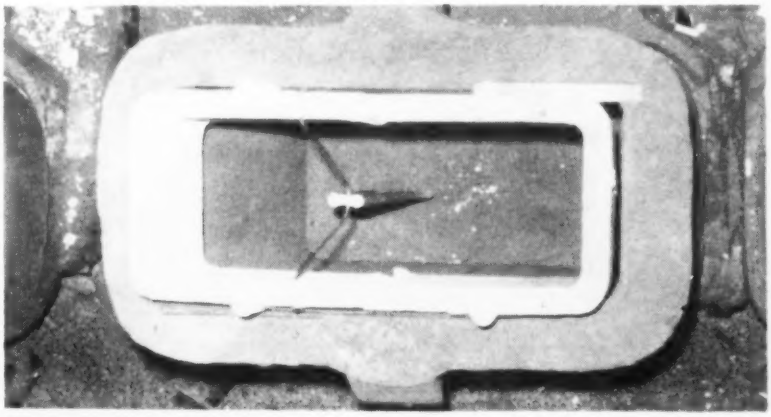
Method Cuts Cost—The aluminum Ex-Bar method of deoxidizing in the ingot molds paves the way for reduction in amount of aluminum needed in the ladle operation. It means increasing the amount of aluminum introduced into the ingot mold.

For example, for every 50-lb reduction in the ladle, approximately ¼ lb aluminum should be added to the ingot mold. It will thus be possible to lower the industry average of over 4 lb aluminum per ton of steel down to about 2 lb per ton of steel.

As of this date, the savings possible with the new Ex-Bar method have not been fully determined. A reduction in the cost of aluminum from 10 to 30¢ per ton of steel results in savings above and beyond the increased tonnage of steel from each ingot mold.

Easy To Compute—Calculating the weight of Ex-Bar needed for the ingot mold follows standard procedures, but with reduced amounts of aluminum required. The exact amount added will vary from mill to mill, but adjustments can be very easily made. Ex-Bar can be used for the rasorite semi-killing of steel in the ladle.

The steel industry now has a tool which makes possible standard practices in mold addition of aluminum. Ex-Bar insures uniform quality. Beyond Ex-Bar's steel oxidizing value, many mills have mentioned the ease of handling and inventory.



READY TO POUR: Wire holds bar so that molten metal will hit narrow profile to speed melting of aluminum. Entire bar melts in process.

It Pays To Keep Weighing Scales Accurate

Accurate weighing of bar and rod stock is important. Short-weigh a customer and he's apt to get peeved; send too much and you're just giving away money.

A minor variation can sometimes become a major headache.

▪ When weighing bar or rod stock for shipment, it pays to be accurate. This is true whether the receiver is a customer or a user in your own plant. By supplying exactly what's asked on the order—no more, no less—you satisfy the customer and save yourself some unnecessary expenses and headaches.

In addition to building good relations, "honest weight" saves the weigher the cost of handling and shipping unordered, and sometimes unwanted, items. Correct scales eliminate give-aways, save shipping additional items to cover short orders, prevent too-small or too-big shipments to the supplier's own shops, and cut associated paperwork.

Weighs Around Clock—Precise weighing of metal stock is so important to Bethlehem Steel Co. that it maintains a full-time crew of six Class-A mechanics, a foreman and a general foreman whose only job is daily inspection of 310 scales throughout one of its large mills. One of these weighing units is in the plant's stocking and shipping section. It almost continuously weighs rods, rounds, flats, drill collar bars and other steel products prior to shipment to customers. The scale is in use about 180 times during a three-shift day. Total weights of individual loads vary from three to five tons. Much of the stock ranges up to 35-ft long.

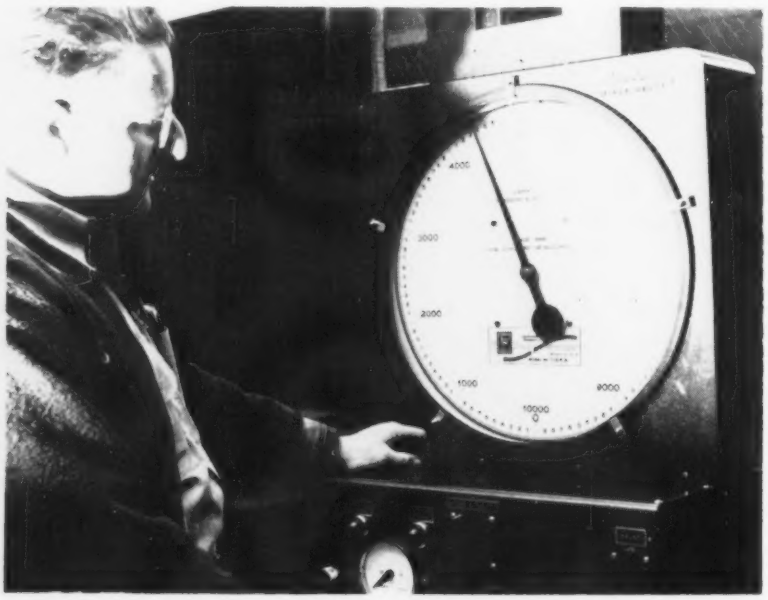
Until several months ago, the bar mill weighing setup was a mechanical system with an automatic dial mechanism located next to the scale platform out in the shop area. Here, the unit suffered from physical shock, vibration, dust and dirt normal in large shop areas. This combination took its toll in weighing accuracy. Finally, the scale's mechanical linkage was beyond repair or replacement.

Electronics Move In—At this point, the firm decided to install a new scale that would take the beating while giving accurate readings. The answer was found in a system designed by Baldwin-Lima-Hamilton Corp., Waltham, Mass. Making use of the old platform and scale pit, the new layout has four 10,000-lb compression type CXX (Baldwin SR-4) load cells. These are mounted beneath the platform on concrete piers. Three-inch bearing blocks resting on the load-cell collars support the way-bridge at the four corners. The load cells are wired to an electronic circuit.

Since the unit is electronic, rather than mechanical, there's no good reason to keep the scale dial out in the shop any longer. Now it's in the stocking and shipping department office which is 50 ft from the platform. If necessary, the indicator mechanism could be 500 ft away without disturbing accuracy.

So far, maintenance of the unit has been practically nil. Scale mechanics report that a regular inspection of the check-rods, way bridges and bearing blocks is about all that's necessary. The setup has no moving parts to lubricate; and dust needn't be cleaned from extension arms or pivots.

To date, the steel company's weighing engineers have reported no downtime for the scales.



HONEST WEIGHT: Electronic load cells accurately weigh bar stock and transmit reading to this indicator.

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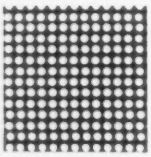
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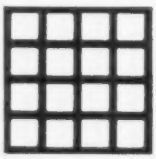

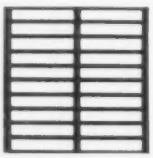
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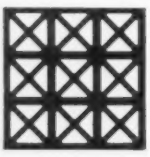

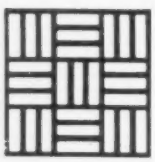
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New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 97.

Automatic Equipment

In a 12-page booklet, an automatic equipment producer tells the story of its growth. It lists the firm's continually diversifying product lines. (Emhart Mfg. Co.)

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Electrical Data

Electric reset impulse counters are described in a bulletin. It discusses the shape of impulses recommended to activate these counters. (Landis & Gyr, Inc.)

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Oil From Coal

Sasol, a large oil-from-coal plant, is the subject of a new 12-page bulletin. It describes how units of a huge South African plant were designed, started up and are now being operated. (The M. W. Kellogg Co.)

For free copy circle No. 3 on postcard, p. 97

Shell Molding

Resins for shell molding are presented in a 32-page booklet. It also describes: (1) a process for casting metals, (2) available types of molding machinery, (3) factors in making a selection, (4) gating techniques and precautions, (5) pattern design, (6) resin bonding of shell molds to insure tightness at the parting line, (7) special metals handling, and (8) sand reclamation. (Barrett Div., Allied Chemical & Dye Corp.)

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Pusher Furnace

Standard, controlled atmosphere, multi-zone pusher furnaces appear in a bulletin. These units are for carburizing, carbon-nitriding, and general heat treating applications up to 1850°F. (Ipsen Industries, Inc.)

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Controllers

Controllers and control stations for modern centralized control operations are the subjects of an 18-page publication. (Moore Products Co.)

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Brinell Testing

Methods and machines for rapid yet "standard" Brinell hardness tests in routine production are covered in a bulletin. (Gries Industries, Inc.)

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Micro Switch

Small, precise switches for electronic control requirements are described in a data sheet. (Micro Switch Div., Minneapolis-Honeywell Regulator Co.)

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Tank Vessels

Tanks, bins and vessels in virtually every shape and form are built by one firm. A 20-page

publication they've just made available reviews their colorful past in the business; it also offers a glimpse at the future. The booklet illustrates several vessel-construction jobs from atomic energy, through gasoline and chemicals, to water. (Graver Tank & Mfg. Co., Inc.)

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Ring Assemblies

Rapidly increasing interest in electronics and automation has created a strong demand for slip ring assemblies. So states a data sheet. These assemblies are principally for current distribution circuits and as rotary switches. (Superior Carbon Products, Inc.)

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Materials Handlers

Mechanical and hydraulic hand lift trucks are discussed in a 16-page booklet. This publication also tells how to obtain a slide film on materials handling. (Assn. of Lift Truck & Portable Elevator Manufacturers).

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Tubing

Integral type finned tubing is described in a 14-page publication. This tubing, for use in a wide variety of heat-transfer applications, is processed from one piece of metal. The fins are formed from a portion of the tube wall. (Wolverine Tube Div., Calumet & Hecla, Inc.)

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Hydro Drive

Principles of a hydraulic torque converter drive are explained in a brochure. This drive is for use in crawler tractors. The new literature helps readers translate torque converter drive features into work advantages. (Allis-Chalmers Mfg. Co.)

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Performance characteristics and applications of one firm's core oil

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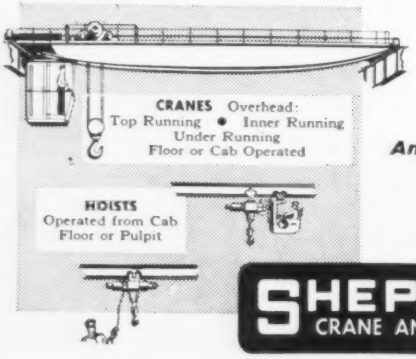

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FREE LITERATURE

materials appear in a folder. Its line of binders include all the core-making systems, namely: conventional oil-sand cores; air-setting cores; CO_2 gassed cores; and resin bonded cores. (Foundry Products Div., Archer-Daniels-Midland Co.)

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Refractories

Offering data on a new refractory surface seal is a bulletin now available. In addition to information on use, technical data, application, shipping, storage, etc., it explains the special features that distinguish the product as a true "seal" which literally becomes a part of the masonry itself. (J. H. France Refractories Co.)

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Capacitors

Direct-current aluminum electrolytic capacitors for communications equipment are described in a 4-page brochure. It lists performance characteristics, and includes tables which enable the reader to calculate a capacitor's size from voltage and microfarad ratings. (General Electric Co.)

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Film Catalog

Sound films available from a large manufacturer are described in a catalog. It lists 47 general interest, product information and training films available without charge. The 16mm sound films are for use by groups only. (Westinghouse Electric Corp.)

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Air Blowers

Utility air circulation sets are listed in a catalog. It illustrates and describes various size ranges and configurations of fan wheels and motors available. Features and advantages of the units are given. (American Blower Div., American-Standard.)

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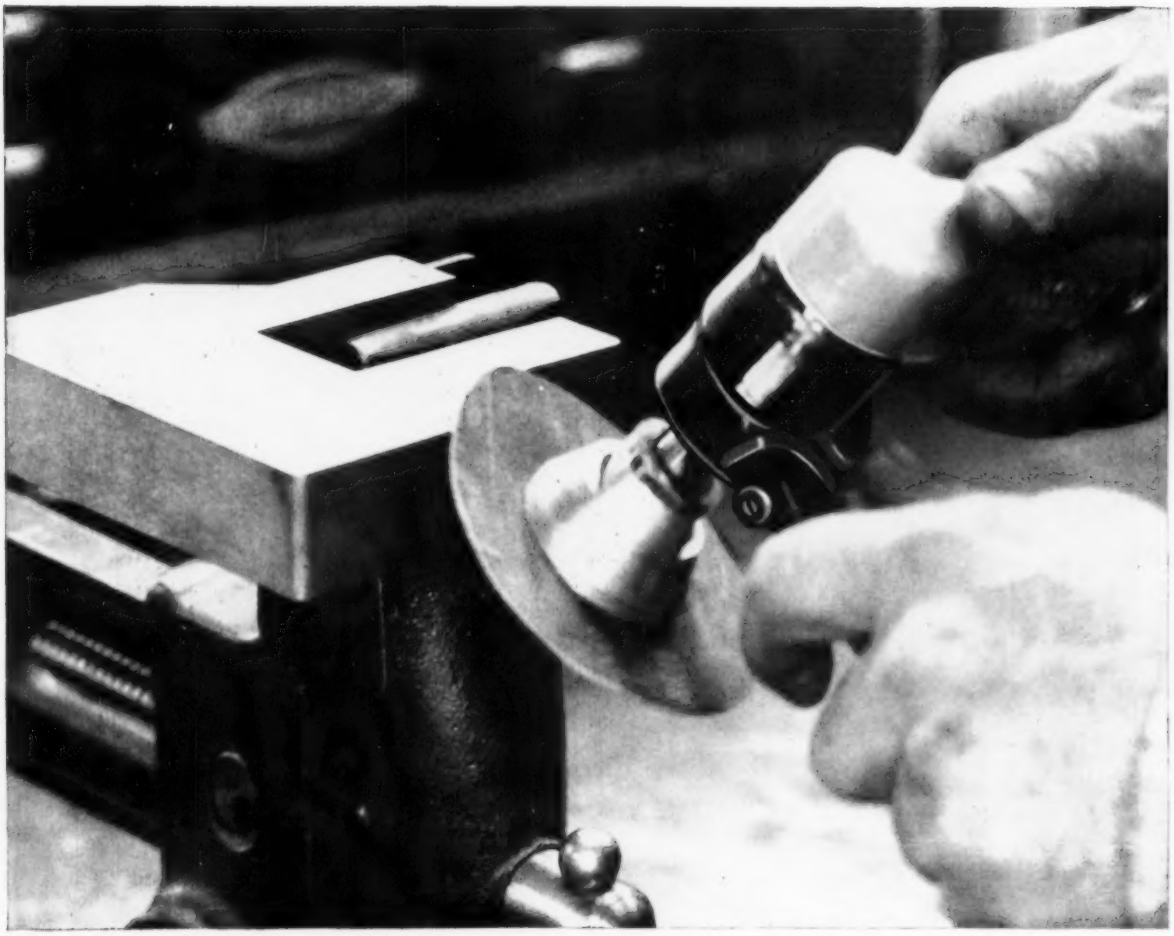

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This section starts on Page 92

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Surface Treatment

Formulations for cleaning, stripping, deburring, etching and other finishing operations are listed in a 48-page catalog. More than 80 products appear. (Frederick Gumm Chemical Co.)

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Semi-Steel Valves

Completely revised, a 43-page catalog covers a line of semi-steel valves. (Meter and Valve Div., Rockwell Mfg. Co.)

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Fiber Containers

In its 16 pages, a catalog describes a company's line of materials handling containers constructed of vulcanized fiber. (Continental-Diamond Fibre Corp.)

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Ultrasonic Gaging

An ultrasonic resonance instrument used for fast, non-destructive testing is depicted in an 8-page bulletin. It offers data on the instrument's advantages for measuring metal thickness, and finding corrosion, laminar discontinuities, or other flaws. (Branson Instruments, Inc.)

For free copy circle No. 22 on postcard

Steel Piping

Steel piping is described in a folder. It contains two data tables. One lists dimensions for 16 sizes of pipe from ⅛ to 8 in. It shows nominal size for six different weight schedules, includes OD, ID, wall thickness, and weights per foot. The other table covers ASTM, ASME specifications. It shows title, grade, type, and analysis for various carbon, alloy, and stainless steel pipe used for high temperature, high pressure and other services. (Tubular Products Div., Babcock & Wilcox Co.)

For free copy circle No. 23 on postcard

Valve Actuators

Westinghouse Air Brake power operators for actuating screwed-gland type, wrench-operated valves are catalogued in a 4-page bulletin. (Rockwell Mfg. Co.)

For free copy circle No. 24 on postcard

Heat Treating

Specialized equipment and skills devoted exclusively to the heat treatment and processing of metals are discussed in a 32-page booklet. It also includes a glossary of heat treating terms and a series of useful engineering tables. (Pittsburgh Commercial Heat Treating Co.)

For free copy circle No. 25 on postcard

Automatic Press

Descriptive literature offers data on a new standard 450-ton double crank automatic press. This press is for producing headlight bowls for automobiles, and similar jobs. It takes a die 170-in. long and 36-in. wide. (Brandes Press Co.)

For free copy circle No. 26 on postcard

Copying Lathe

Automatic and multicycling, a new copying lathe is described in a bulletin. It contains details on the lathe, which is hydraulically controlled, and gives specifications. (Cone Automatic Machine Co., Inc.)

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Vinyl Covering

Walls that need no repainting or repapering; lasting, colorful, textured surfaces on ducts, grilles and a multitude of metal parts. These

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FREE LITERATURE

are some assets of an easy-to-clean vinyl material when laminated to wall board, particle board, or metals. A folder describes the product. (North East Laminates, Inc.)

For free copy circle No. 28 on postcard

Liquid Lock

Threaded fasteners can now be locked tight with a liquid. A 4-page brochure explains what the material is, what it does. (American Sealants Co.)

For free copy circle No. 29 on postcard

Sheet Separators

Sheet steel separators are covered in a catalog. These separators are permanent magnet units which induce a magnetic field in stacked steel sheets and laminations. They reduce operating costs, the catalog states, because they speed up sheet feeding by separating one from another. (E. V. Neilsen, Inc.)

For free copy circle No. 30 on postcard

Hydraulic Presses

How a hydraulic press brake solved a tough production job is told in a 4-page performance report. It shows details of the machine's front and rear construction. (Superior Machine Co.)

For free copy circle No. 31 on postcard

Brass, Bronze Ingots

A new brass and bronze ingot making process is described in a 16-page brochure. It says that this process, employing "radically new methods and apparatus," goes forward from the point "where the best previous methods have stopped." (I. Schumann & Co.)

For free copy circle No. 32 on postcard

Lubricants

A 16-page brochure covers the history and development of molybdenum disulfide lubricants. A veritable textbook on the technical aspects of molybdenum disulfide as an extreme pressure lubricant, the bulletin covers the physical and chemical properties of the compound. (The Alpha Molykote Corp.)

For free copy circle No. 33 on postcard

Beryllium Clips

Clips made of beryllium copper are described in a firm's literature. These clips, it says, withstand high currents without annealing; they're immune to mechanical fatigue. A sample clip is included. (Beryllium Corp.)

For free copy circle No. 34 on postcard

Metals Services

Heat treating, metals finishing and metallurgical laboratory work done by a service company is described in a folder. It tells how the firm offers users a one-stop metallurgical service. (Ohio Metallurgical Service, Inc.)

For free copy circle No. 35 on postcard

Zinc Brightener

Literature now available reviews advantages of a new zinc brightener used in barrel plating of parts. (Smoothex, Inc.)

For free copy circle No. 36 on postcard

Wire Design

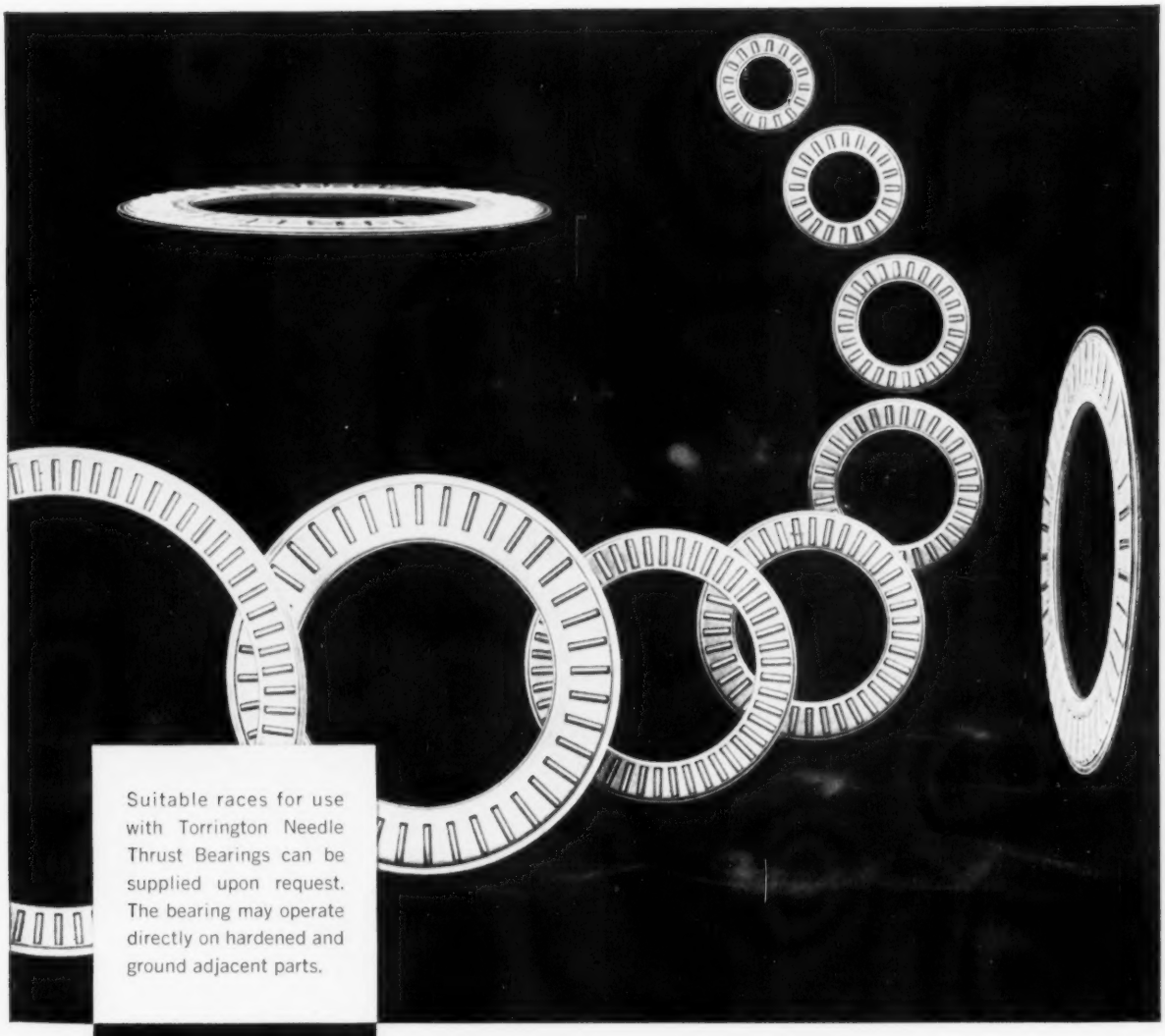
How to design with nickel alloy wire is told in a 6-page publication. It covers designing with alloy wire such as Monel, nickel, Inconel, Inconel X, stainless and heat-resisting steels. (Techalloy Co., Inc.)

For free copy circle No. 37 on postcard

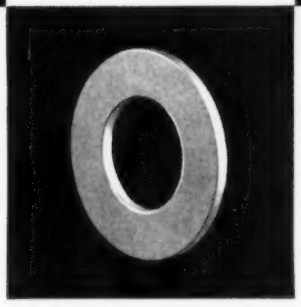
Corrosive Fumes

Costly problems created by corrosive fumes and atmospheres are discussed in a folder. It tells how air-moving equipment can get rid of these. Described are: (1) centrifugal and axial-type plastic fans, (2) rubber-lined and coated centrifugal-type steel blowers, (3) plastic or rubber-lined ejector units, and (4) coated axial fans. (Heil Process Equipment Corp.)

For free copy circle No. 38 on postcard



Suitable races for use with Torrington Needle Thrust Bearings can be supplied upon request. The bearing may operate directly on hardened and ground adjacent parts.



Torrington's new Needle Thrust Bearing grows in popularity... and range of sizes

Designers have been quick to take advantage of the compactness, high thrust capacity and low unit cost of Torrington's new Needle Thrust Bearing.

To meet the growing demand for this bearing in automatic transmissions, governors, steering gears, bevel gears, hydraulic pumps, torque converters and many other applications, tooling has been completed to produce bearings ranging from .500" ID to 3.000" ID.

Only .0781" thick, the Torrington Needle Thrust Bearing is thin as an ordinary thrust washer, yet brings all the advantages of anti-friction operation to applications where space is limited. Mating steel retainer halves are joined securely to form a self-contained unit that is easy to handle and install.

Plan today to evaluate the Torrington Needle Thrust Bearing. Services of our Engineering Department are available to help you. For full information, write for Bulletin No. 16, "Torrington Needle Thrust Bearings." *The Torrington Company*, Torrington, Conn.—and South Bend 21, Ind.

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47-page catalog illustrating complete line of
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WRITE BEFORE NEXT TUESDAY

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The cylinder of "distinction" shown above is a Factory Reject. Only straight rods available.

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Don't Scrap Usable Handling Units

When a materials handler wears out, don't toss it out. At least, don't throw all of it away.

Look over your present equipment carefully. Chances are some items are in good shape.

Save these; scrap the rest.

■ When production goes up, materials handlers get taxed with extra burdens. Wear and tear soon take their toll, especially if the equipment is mechanical.

When units break down excessively, wear out or otherwise become useless, it's replacement time. Certainly it's important to keep your handling equipment up-to-date and in good shape. However, if you're not careful some perfectly usable equipment might end up in the scrap pile.

An Example—Within the past decade, growing steel production has placed a steadily mounting burden on existing materials handling units. Some of this equipment has been in use 20 years or more. Under the strain of operating constantly at capacity or near capacity, some of the mechanical items are beginning to wear out. Yet, the structural portions are still adequate.

To replace bridges that are still structurally sound is both costly and wasteful, concludes one major Eastern steel producer. This company has found that production can be increased and the life of the bridges lengthened by replacing only the man trolley which controls the operation of the bucket.

Old Bridge; New Trolley—Since 1950, this firm has installed new man trolleys on three bridges built before 1920; a fourth has just been delivered to the same mill. The latest addition is part of a 40-year-old coal bridge. This is used both for unloading and stocking coal and reclaiming it from the storage pile to hopper cars bound for the mill's coke plant. It's identical with another trolley installed in 1954 on a companion bridge. This is also 40-years-old.

Old bridge plus new trolley equals "good-as-new" operation.

Both trolleys, built by Dravco Corp., Pittsburgh, support 10-ton capacity buckets. Although bucket size has not been increased, mill operators report that the trolley

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 97. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

actually ups the bridge's output. Faster operating speeds and an elimination of downtime for repairs makes the difference.

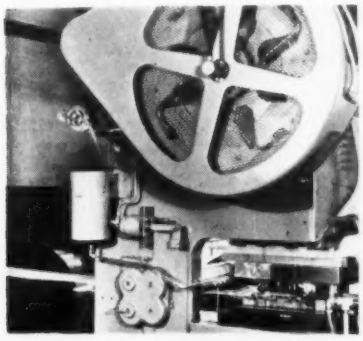
Other trolleys at the mill include two ore bridges.

Welding, Stamping Team Boosts Production

Three separate production operations needn't require a trio of operators, of course. However, three individual machines are unnecessary sometimes, too. This is true even when high-speed stamping, fabricating and resistance welding team-up.

By closely integrating its stamping and welding setups one firm speeds up production considerably. In producing blower wheel cages for air-conditioners, the company turns out 150 of them per hour. This is all performed without an operator.

Press Goes First—As the operation begins, strip steel enters a 75-ton press; an accurate feed mechanism provides precise stock advance. Operating at 120 strokes per minute, the press pierces, lances and forms the blower louvers. The press itself is somewhat unique as it em-

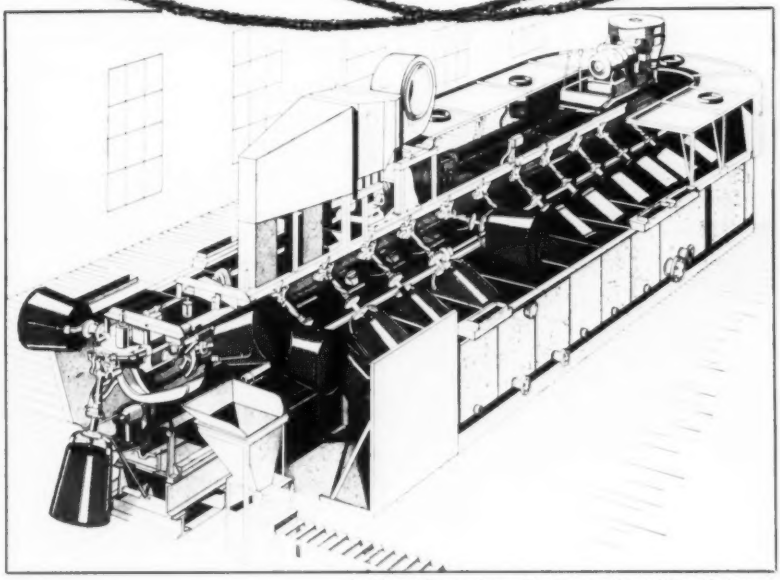


Press pierces, lances and forms at 120 strokes per minute.

ploys a "no float" ball bearings raceway construction; this affords very good accuracy and parallelism for long die life.

Completed stampings then move on through a special handling system. This conveys the first stamping three feet and drops it into position on the lower racks. Here, the second stamping is interlaced

Barrel Plating by Stevens Really Cuts Costs



End View of Stevens Super "E" Automatic Barrel Plating Machine.

Since Stevens first introduced the Automatic Barrel machine scores of industries have enjoyed these operational advantages. Check them against your present operations.

MINIMUM LABOR REQUIRED — In most cases, one unskilled employee can operate the machine.

HANDLES THE COMPLETE CYCLE — Including cleaning, pickling, chromate treatments, plating, bright dip and drying.

COMPLETELY AUTOMATIC — No barrel lids to fasten and unfasten during automatic loading and unloading.

BETTER HANDLING — No mixing of parts. Becomes a part of a straight line production system.

NO HEALTH HAZARD — Occupational health hazards eliminated with ventilation of equipment.

UNIFORMITY OF PLATE — Accurate plating cycles timed to meet your requirements.

FITS ANY PLANT LOCATION — Does not need special buildings—Can be moved at any time. Low head room.

DEPENDABLE — Scores of machines in use. Machine design and construction constantly improved.

LOW INITIAL COSTS — For average operation lowest initial machine costs.

LOW MAINTENANCE COSTS — Proven over years of use and in varied operations.

FREDERIC B. STEVENS INCORPORATED
YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

Let a Stevens Sales Engineer show you how you can cut costs in your plating operation with a Stevens Automatic Barrel. Write us direct. Frederic B. Stevens, Inc., 1816-18th Street, Detroit 16, Michigan.

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● Cools your jacket water for engines or process equipment or electric apparatus. Your closed system keeps free from dirt or maintenance troubles. You can cool air, gases, chemicals, plating baths, quench baths, welding machines, extrusion and drawing machines and hydraulic presses. You get real precise temperatures, save rejections, lower production costs. Use NIAGARA AERO HEAT EXCHANGER cooling with atmospheric air . . . saves water, pumping, piping and power; quickly saves its costs.

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NIAGARA BLOWER COMPANY
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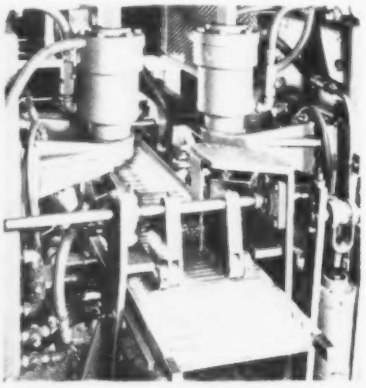
TECHNICAL BRIEFS

with the first and accurately positioned. Both stampings are then indexed to the welding station.

Welders Tackle Job—Two specially tooled standard 30-kva bench welders automatically index and join the two stampings with 38 high-strength welds. Adjustable limit



Precision bench welders join two stampings with 38 welds.

switches automatically start an electronic timer which sequences the weld and index.

All equipment for the stamping, welding and indexing of the subassembly was designed and built by Precision Welder & Flexopress Corp., Cincinnati, working with engineers of the Mayne Products Co., Dayton. By integrating the steps from the very beginning, production rates of the two machines are accurately sequenced for high production. Both press and welder operate at peak efficiency, the manufacturer reports.

Package Saves Space

Octagonal corrugated containers reduce packaging and shipping problems for Reynolds Metals Co., Bauxite, Ark., in its handling of activated alumina. The container, made by Gaylord Container Corp., St. Louis, teams with a 3-mil polyethylene bag to prevent the granular material from absorbing water from the atmosphere. Each corrugated box carries 400 lb.

Previously used containers were heavy and bulky in storage; the corrugated drum is received knocked-down. Thus the new one occupies a minimum of warehousing space. The octagonal shape also makes efficient use of shipping space.

Hard-facing Lengthens Pugmill Paddle Life

Worn paddles rebuilt with an arc-welded overlay of a special hard-facing alloy are outlasting six original cast iron parts in a pugmill operated by a large Canadian foundry.

Since original paddles are cast by the foundry itself, they're nominal in cost. However, the foundry still prefers hard-faced parts. Here's why: Cast iron conventional paddles wear out. This reduces mixing efficiency in the pugmill.

More important, the firm runs into substantial costs when replacing the paddles. And for unprotected paddles, this means replacement every five days. Parts

This pugmill paddle has a ⅛-in. overlay of a special alloy.

hard-face rebuilt with the special alloy, operating under the same conditions, regularly last 30 days.

Resists Sand Abrasion—According to Wall Colmonoy Corp., Detroit, selection of the properly overlay should be based on "operating conditions encountered in normal service which contribute to rapid wear." Since abrasion from sand mixtures is the major consideration in a pugmill, the foundry picked an alloy especially made to resist such wear. The material is an iron base alloy containing chromium borides.

... Results of a Superior Beginning

The countless parts and products made from Roebling high-carbon steel spring wire and flat spring steel have one thing in common . . . their superior quality. This, of course, is related to the inherent fineness of the materials.

The variety in which Roebling offers these spring materials is equally impressive. They are available in hard drawn, hard rolled, annealed or soft, tempered or untempered. Types include zigzag and no-sag wires; upholstery and mechanical spring wires; valve spring wire; clock- and motor-type spring steels and flat spring steels of all types and description.

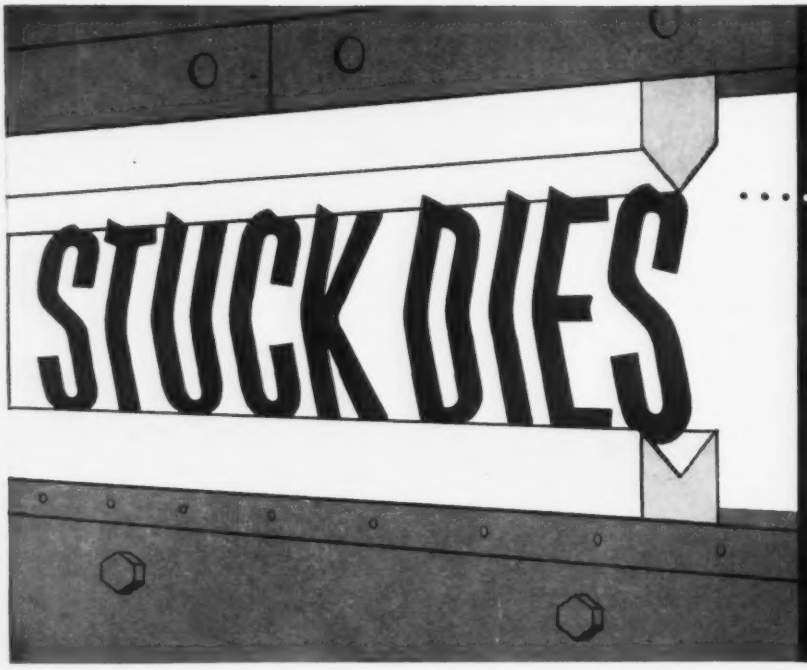
Whatever the type, size or characteristics you require—Roebling can fit your needs exactly. You'll find that Roebling quality means maximum production from your machines and consistent uniformity in your product.

For spring wire and flat spring steel information, contact Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities—Subsidiary of The Colorado Fuel and Iron Corporation

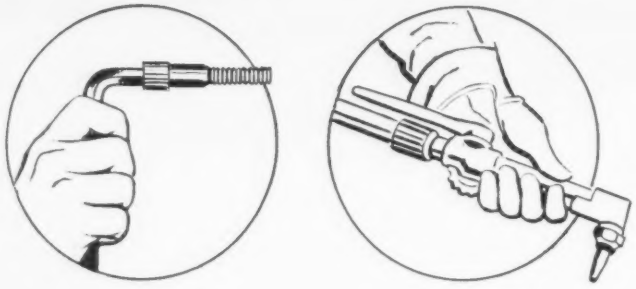
Roebling... Your Product is Better for it



STUCK DIES

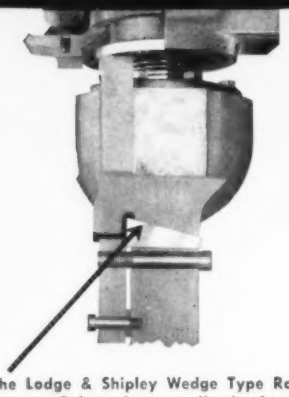
. . . . quickly, easily released with exclusive patented LODGE & SHIPLEY

WEDGE TYPE RAM PRESSURE RELEASE



THIS . . . **NOT THIS!**

- **Use wrench . . . . . not a cutting torch**
- **in minutes . . . . . instead of hours**
- **without damage . . . . die holder destroyed**

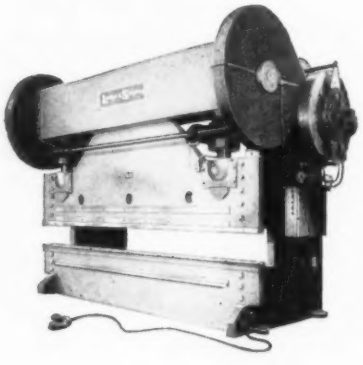


The Lodge & Shipley Wedge Type Ram Pressure Release is unusually simple and rugged in design. A heavy steel wedge has a top angle that complements a similar angle on the base of the ram pittman socket housing. Held securely by a heavy steel plate, the wedges can be released quickly to provide up to ¼" additional clearance.

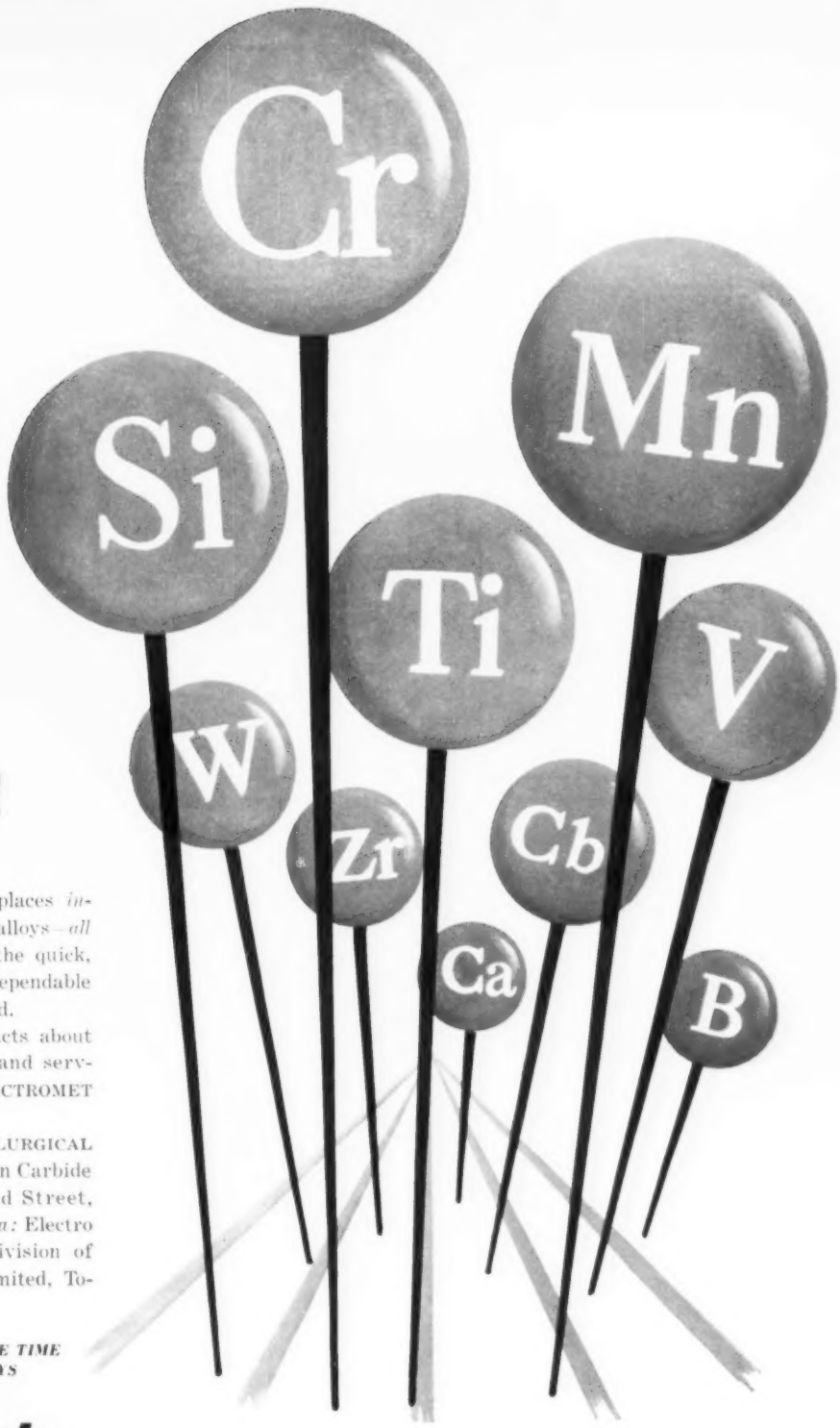
When a press brake is stalled due to improperly adjusted dies . . . do you face a short delay or near disaster?

With a Lodge & Shipley Press Brake, release of the stuck dies is a quick, simple, non-destructive matter as described in the accompanying detail.

This is but one of many outstanding Lodge & Shipley Press Brake features designed for fast, accurate, efficient and dependable press brake operation. New literature gives complete details. Write: **The Lodge & Shipley Co., 3073 Colerain Ave., Cincinnati 25, Ohio.**



Lodge & Shipley *. . . your Lodge-ical choice*



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Get all the important facts about ELECTROMET's products and services. Get our Catalog: "ELECTROMET Ferro-Alloys and Metals."

Write ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. *In Canada:* Electro Metallurgical Company, Division of Union Carbide Canada Limited, Toronto.

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WE HAVE IT! More than 100 different alloys are stocked and ready for immediate delivery at ELECTROMET. Alloys of the major elements including: Chromium, Manganese, Silicon, Titanium, Vanadium, Tungsten, Boron, Calcium, Columbium, Zirconium.

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Red Circle Rolls for all Purposes

The Red Circle on the Roll is the Hyde Park mark of Quality. Hyde Park makes rolls for every type mill.

Chilled Rolls
Alloy Iron Rolls
Moly Rolls
Nickel Chilled Rolls
Grain Rolls
Cold Rolls
Sand Rolls

for
Finer Finish, Longer Life
and Greater Tonnage
specify Red Circle

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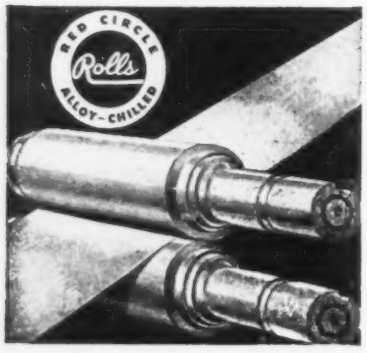
GREY IRON CASTINGS



MATERIALS ROUNDUP

Aluminum Alloy Has Brighter Finish

Looking for a heat-treatable aluminum alloy that offers an extremely bright finish when anodized?

Then this material may be just what you want.

▪ When anodized, a new aluminum alloy attains an extremely bright finish.

Designated Alloy X6463 by its developer, Alcoa Research Laboratories, the material is a heat-treatable aluminum alloy. Its producer, Aluminum Company of America, Pittsburgh, reports that the product offers "the brightest finish ever achieved on a commercial aluminum extrusion."

Shiny Surface—Products fashioned from the alloy exhibit similar mechanical properties to Alloy 6063. They can also be extruded to the same manufacturing tolerances as Alloy 6063.

A magnesium-silicon alloy, the material is expected to find use in appliance, architectural and automotive applications.

Colorful Tapes

Extra colorful vinyl plastic tapes are now being made by Devon Tape Corp., Mt. Vernon, N. Y. The tape is thin, yet tough. It sticks any place, any time, is waterproof, resists heat and cold. Moreover, it doesn't dry out and become brittle. The tape also resists acids, abrasives, alkalis and corrosives.

Paint While Working

Shop workers needn't stop work just because a painter is there to do his job. A new vinyl enamel coating applies safely to machinery even when it's in use. The plastic emulsion is non-flammable during application and fire resistant when

Shopworker, painter do jobs without disturbing each other.

dry. In addition, it has a non-offensive, non-toxic odor that is hardly noticeable to workers in adjoining areas. Wooster Finishes Corp., Wooster, Ohio, makes the paint.

Cures Rust Headaches

Though they look like big aspirin tablets, new pill-like items cure a different type of pain: rust headaches.

Made by Al-Con Chemical Co.,

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 97. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

New Orleans, the tablets create a corrosion resistant atmosphere around any ferrous metal object

Sealing this part and tablet together stops rust, corrosion.

packaged in a closed container with them. One tablet protects 30-cu in. of enclosed space for periods up to three years.

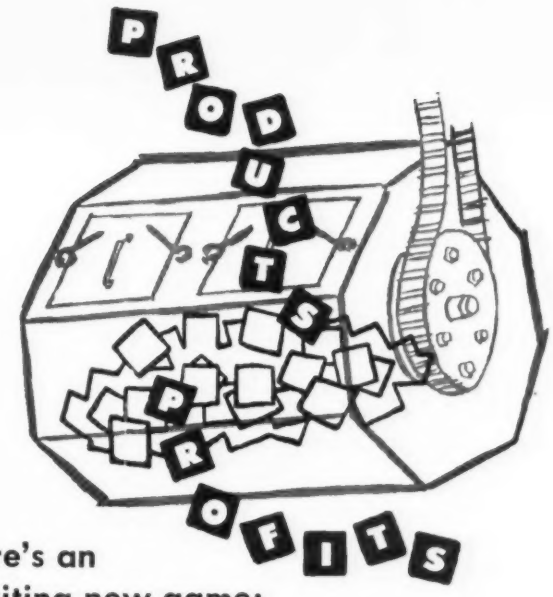
The tablets are based on a vapor phase inhibitor developed by Shell Oil Co. They protect a host of small parts from gages and micrometers to nuts and bolts.

Oil Additives

A new group of oil base additives mix with mineral oils to form metal cutting materials. These additives, products of the milling products division of Cincinnati Milling Machine Co., come in three types. These are: general purpose, non-corrosive and heavy duty formulations. They blend with readily available mineral oils in proportions varying from 1 to 20 pct. The additives come in concentrated form or pre-blended.

High Strength Steels

The National Bureau of Standards has experimentally produced an ultra-high-strength steel. This material can be heat treated to a strength of 285,000-psi with sufficient ductility for structural purposes. The steel is made by normal melting and working processes and should not be difficult to manufacture, the bureau reports. A further investigation is aimed at developing a 300,000-psi steel.



Here's an exciting new game:

PUT your products in the barrel
TAKE your profits out

One of the greatest money-saving opportunities in metalworking lies in the use of barrels to finish parts by the hundreds in place of conventional methods that finish one part at a time.

Barrel finishing makes easy work of many tough jobs of grinding, deburring and buffing by wheel.

One Oakite customer changed to barrel methods to deburr curved stainless steel strips that are 14 inches long. The cost for deburring 20,000 strips was reduced from $3,000 to $125.00.

FREE For a copy of *"Precision Barrel Finishing"* —containing valuable information on cutting down, deburring, descaling, and burnishing—write to Oakite Products, Inc., 30H Rector Street, New York 6, N. Y.

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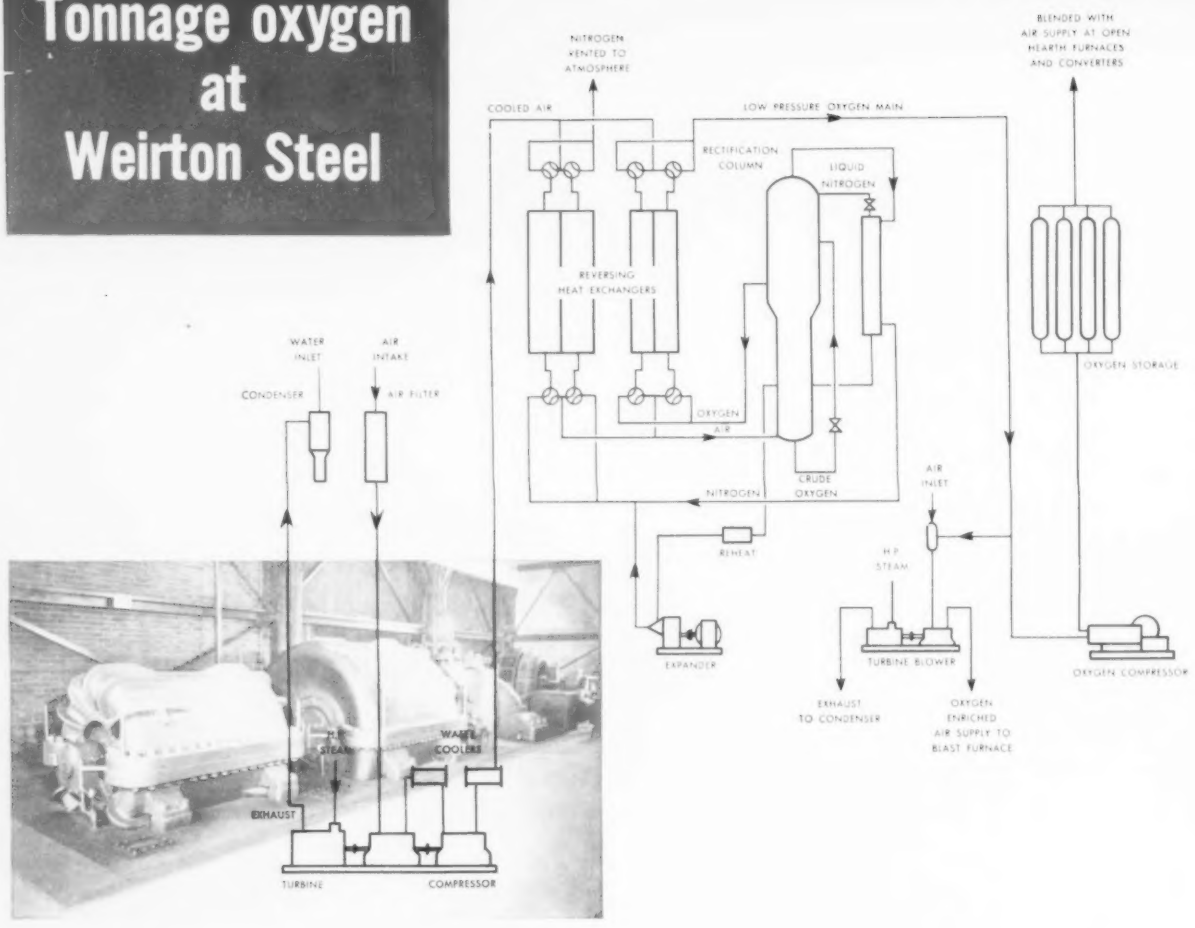
Tonnage oxygen at Weirton Steel



Ingersoll-Rand turbo-compressors cycle air in Weirton's 450-ton per day oxygen plant

"THE Weirton Steel Company Division of the National Steel Corporation started the operation of a tonnage oxygen plant in February 1951, and has operated this plant for the past *six* years making an average daily production of about *460* tons of oxygen for blast furnace and steel plant usage. During this *six*-year period the oxygen plant has produced *750,000* tons of 95 per cent purity oxygen, of which about *650,000* tons have been used for the enrichment of the blast for blast furnace iron production."

Julius H. Strassburger, Assistant Vice President, National Steel Corporation.

For the main air blower in this oxygen plant, which was designed and built by Air Products, Inc., an Ingersoll-Rand tandem turbo-compressor was selected. Pictured above is the high-pressure end of the compressor arrangement. The low-pressure unit delivers air at about 35 to 40 psig through a double intercooler to the second unit, where it is further compressed and discharged at pressures from 75- to 90-psig. The two compressors run in series and are driven by an Ingersoll-Rand steam turbine rated at 10,610 bhp at 3300 rpm.

Among the advantages of oxygen enrichment of the blast, according to Mr. Strassburger, are these: increased iron production with less "cost above Materials;" less flue dust per ton of iron; 25 to 50 lbs of coke saved per ton of iron; increased Btu of the top gas due to less nitrogen; no detrimental effect on furnace linings.

If you are interested in more complete details on the use of I-R turbo-compressors in tonnage oxygen production, contact your nearest Ingersoll-Rand engineer.

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12-600

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MOLY NEWS

CLIMAX MOLYBDENUM COMPANY, 500 FIFTH AVENUE, NEW YORK 36, N. Y.

Super-Strength Structural Steels Boost Minimum Yield Strengths to 150,000 psi.

Seven steel companies in the U. S. are now producing a group of "Super-Strength Structural Steels" with considerably higher yield strengths than the well-known "High-Strength Low-Alloy" steels.

These Super-Strength steels offer minimum yield strengths ranging from 55,000 to 150,000 psi. And they have other useful properties, depending on composition, including strength at moderate temperatures, toughness at low temperatures, and good wear resistance. Almost all of these steels contain molybdenum as an essential element.

The search for steels with greater yield strengths has gone on for many years. Before about 1930, carbon steels with a yield point of roughly 30,000 psi were standard for almost all structural purposes. Then came the development of "High-Strength Low-Alloy" steels. They boosted minimum yields into the 50,000 psi range.

Now, the newer Super-Strength Structural Steels are being welcomed by designers, who see in them a way to solve one of their major problems — to minimize weight and size while retaining quality and reliability.

. . . For more information on these steels, including their trade names and compositions, circle number 1 on the coupon.

Moly's High Hot Strength Shows Promise for Jets and Rockets

Molybdenum-base alloys were described at the 1955 American Rocket Society annual meeting as having the greatest promise for true high-temperature operation.

Missile and powerplant designers are interested in moly mainly for its high temperature strength. Molybdenum-base alloys have been developed with higher useful strength at temperatures over 1600 F than any other presently known metallic material.

The jet propulsion field — including guided missiles and aircraft powered by rocket, ramjet, and turbojet engines — covers a tremendous variety of requirements and service conditions in respect to temperature, atmosphere, amount and type of stress, vibration, thermal shock, and prospective life. Molybdenum's properties make it a logical choice in many cases because it has:

1. High creep and rupture strength.
2. High tensile strength at high temperatures.
3. High modulus of elasticity.
4. A combination of high thermal conductivity, low specific heat, and low expansivity, which minimizes non-uniform temperature distribution and makes molybdenum insensitive to thermal shock.
5. High resistance to erosion by hot gases.
6. High melting point.

It seems safe to conclude that molybdenum-base alloys will become important structural materials in the jet propulsion field. And they will become essential for many parts operating at temperatures in excess of 1600 F.

. . . from "Molybdenum for High strength at High Temperatures," by R. Freeman and J. Briggs, JET PROPULSION, *February, 1957.*

For a copy of the complete article, circle number 2 on the coupon.

Moly Adds Strength and Corrosion Resistance to Titanium

Commercially pure titanium is fairly strong and highly corrosion-resistant. Alloying it, however, substantially increases these useful properties.

Molybdenum may prove to be one of the most useful of the alloying elements for titanium. Studies at Armour Research Foundation, for example, show that when molybdenum is used instead of vanadium, creep properties are greatly improved. At 1020 F, a stress of approximately 20,000 psi produces a creep rate of 10^{-4} in. per in. per hr in Ti-6 Al and Ti-6 Al-4 V, whereas 40,000 psi is required to produce the same creep rate in a Ti-7 Al-3 Mo alloy.

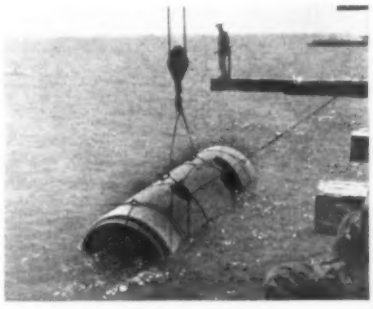
In summary, new alloy development is opening the way for titanium's extensive use in jet engines and air frames. Ti-Al-Mo alloys, for example, give better elevated temperature properties than the Ti-6 Al-4 V alloy now most widely used. And the alloy containing 7% Al and 3% Mo appears particularly promising.

Another Ti-Mo alloy contains 30 to 40% Mo. This alloy is claimed to resist boiling 40% sulphuric acid and boiling 20% hydrochloric acid as well as platinum, tantalum or gold. Such a retained beta alloy is weldable and could be fabricated into sheet. These corrosion-resistant characteristics would add to the value of all-beta Ti-Mo alloys.

. . . from "Molybdenum as an Alloy Addition for Titanium," by Harold Margolin, METAL PROGRESS, *February, 1957.*

For a copy of the complete article, circle number 3 on the coupon.

Moly Goes to Sea In A Sewer



Cast iron joint ring in pipe, before lowering into position. Joint rings were made by Alhambra Foundry Co., Ltd. and the concrete pipes poured by American Pipe and Construction Co.

Positioning 64 ton reinforced concrete sewer pipe sections puts quite a strain on the cast iron joint rings used to join them. Especially when the job is done under water at depths up to 210 feet.

Joint rings must be strong enough to withstand stresses developed when the pipe is drawn together, plus sufficient impact resistance to withstand handling and placement.

Those are good reasons why the County Sanitation District No. 2 of Los Angeles County specifies ASTM A 48, class 40 iron for the rings. In addition to the required 40,000 psi, tensile strength, and 2600 lb transverse strength minimum, (on a 1.2 in. test bar), the bar must be capable of deflecting at least 0.20 in. and the iron must contain at least 0.40% Cr, 0.60% Cu and 0.35% Mo.

Examination of pipe lengths after six years' service showed them in excellent condition. Equally good performance is expected from the most recent installations which extend some 8000 feet into the Pacific Ocean, and are believed to be among the largest in the country.

. . . For more information on the contribution of moly to toughness and shock resistance of cast iron, circle number 4 on the coupon.

Climax Molybdenum Company, Dept. 2,
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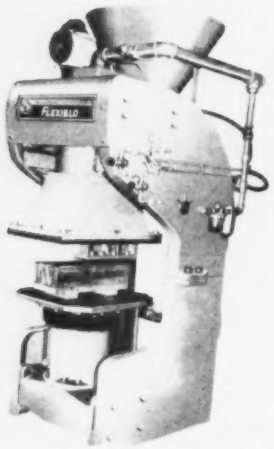
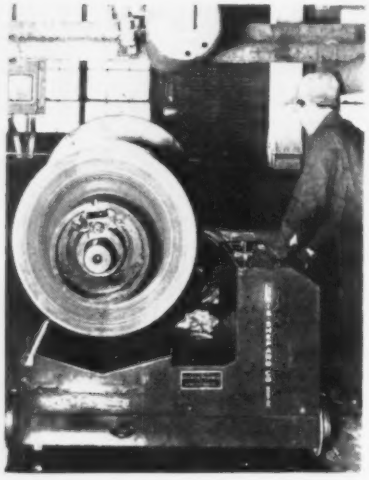


Core Blowing Machine Does Work of Three Setups

Actually three core blowers in one, this machine features conveniently located controls for easy operation. A simple setting of a pneumatic dial provides it with any of three operations. These are: (1) a high pressure blow; (2) a regulated pressure prefill followed by a high pressure blow, and (3) a regulated pressure pulsating blow. The equipment's design lets the unit blow cores fast and hard with comparatively little core box wear. It features quick acting, poppet type blow valves with quick exhaust. In addition, the core blower boasts an extensive sand feed area combined with an automatic vibrator, resulting in very good magazine feeding. The device blows cores using any sand within practical foundry limits. It also features an all-pneumatic control circuit with a hydraulic draw cylinder, hydraulic table height adjustment and diaphram vertical core box clamp. (Pettibone Mulliken Corp.)

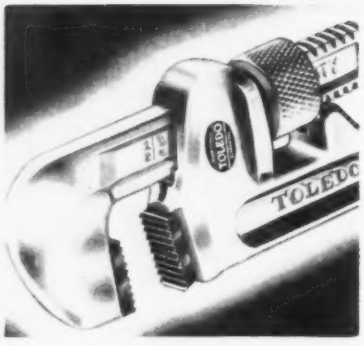
For more data circle No. 39 on postcard, p. 97



Hydraulic, Electro-hydraulic Units Lift Coils

Coil lifts in a wide variety of capacities are now available from one maker. These units feature hydraulic and electro-hydraulic controls. They are of all steel construction. Each has a V-type deck to aid handling of different size coils. All have four-flanged wheels for operation on tracks. One model, a 4000-lb capacity hydraulic coil lifter, handles coils with as much as a 48-in. overall diameter and a 30-in. width. Through the action of a double-acting hand pump, it lifts coils to heights of 18 in. Coils weighing to 5000 lb are handled with a hydraulic footlift coil lifter. This handles coils of 36-in. widths and as much as 48-in. diams. By using the foot pedal, coils easily lift to 9 in. Also available is a hydraulic handlift coil lifter with an 8000-lb capacity. Actually a modification of a handlift truck, the model uses its pulling handle, when engaged, as the lifting device. Other models handle 10,000 and 20,000-lb loads. (Lewis-Shepard Products, Inc.)

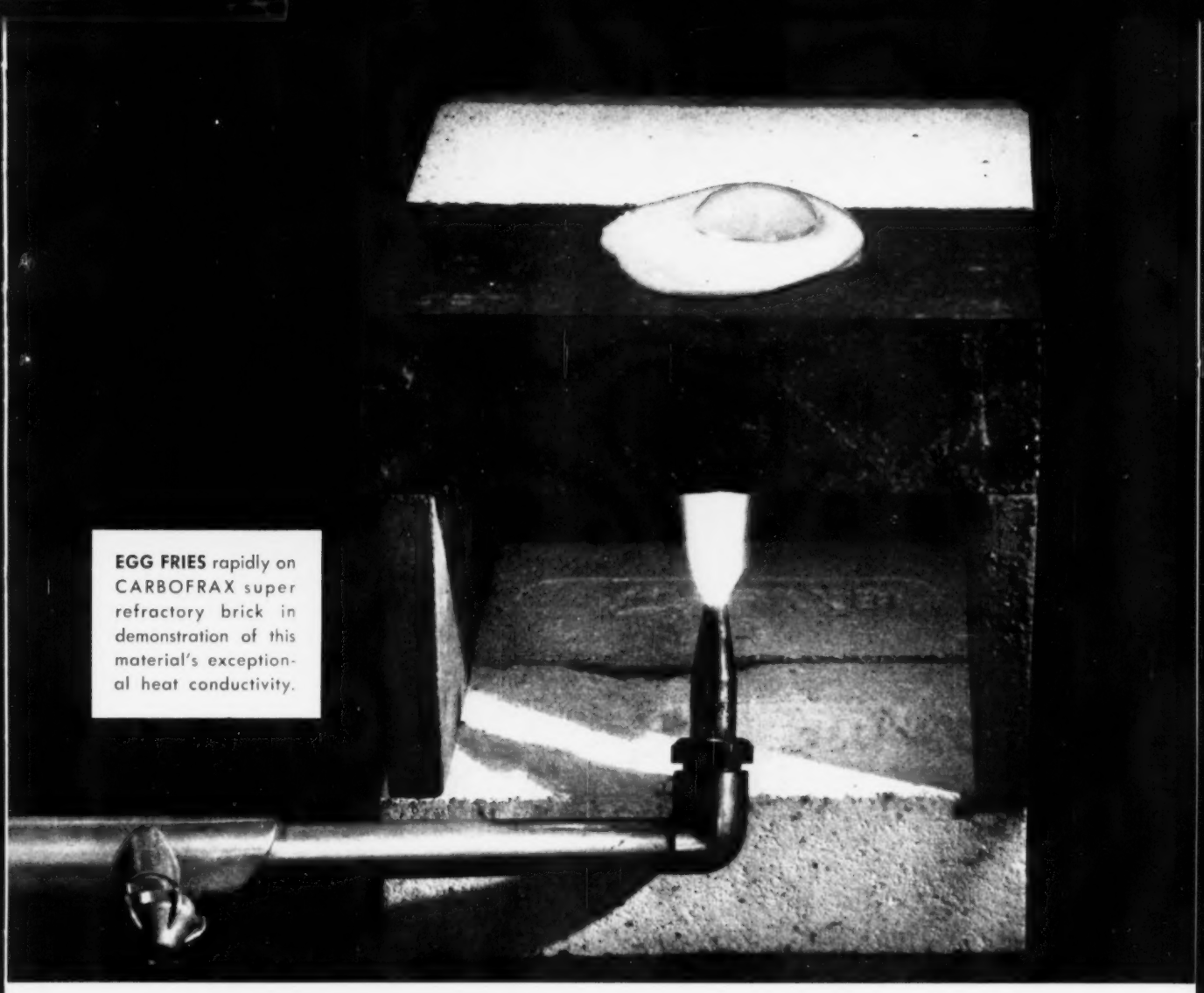
For more data circle No. 40 on postcard, p. 97



Aluminum Wrench Is Lightweight and Strong

Heavy-duty yet lightweight; that describes a new pipe wrench. Of aluminum construction, it weighs about half that of a conventional wrench. Steel jaws team with its forged aluminum body to make a good, solid, lightweight tool. It's available in popular sizes 10, 14, 18, 24 and 36 in. The wrench features an aluminum handle, housing and hook with replacable forged steel insert jaws and a forged heavy duty nut on 10, 14 and 18-in sizes. It comes with a choice of a forged aluminum housing and handle, forged aluminum hook with steel replaceable jaws or a forged steel hook on 24, 36-in. models. (Toledo Pipe Threading Machine Co.)

For more data circle No. 41 on postcard, p. 97



EGG FRIES rapidly on CARBOFRAX super refractory brick in demonstration of this material's exceptional heat conductivity.

Refractories for high **heat conductivity**

At 2200°F, CARBOFRAX® silicon carbide brick transmit 109 BTU/hr., sq. ft. and F/in. of thickness. That is roughly 11 times the heat conductivity of fireclay and about 70% that of chrome-nickel steels. This conductivity becomes particularly valuable at the higher temperatures which these refractories alone can withstand (up to 3000°F without deformation; under certain conditions even higher). For example, there is increasing use of CARBOFRAX radiant tubes, muffles, retorts, and other structures which may operate at temperatures beyond the limitations of metals.

Seldom, however, are refractories called upon to provide heat conductivity alone. They must also be able to resist corrosion, spalling, cracking, heat shock and abrasion. Ability to carry heavy loads at high temperatures is another requirement often encountered. These are but a few of the conditions successfully met by super refractories pioneered by Carborundum. Among them, you are almost certain to find answers to your refractory and high-temperature problems. For help, fill in and mail this coupon:

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Please send me:

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- ☐ Bulletin on Properties of Carborundum's Super Refractories
- ☐ Here is a description of my high temperature problem. Can you help me?

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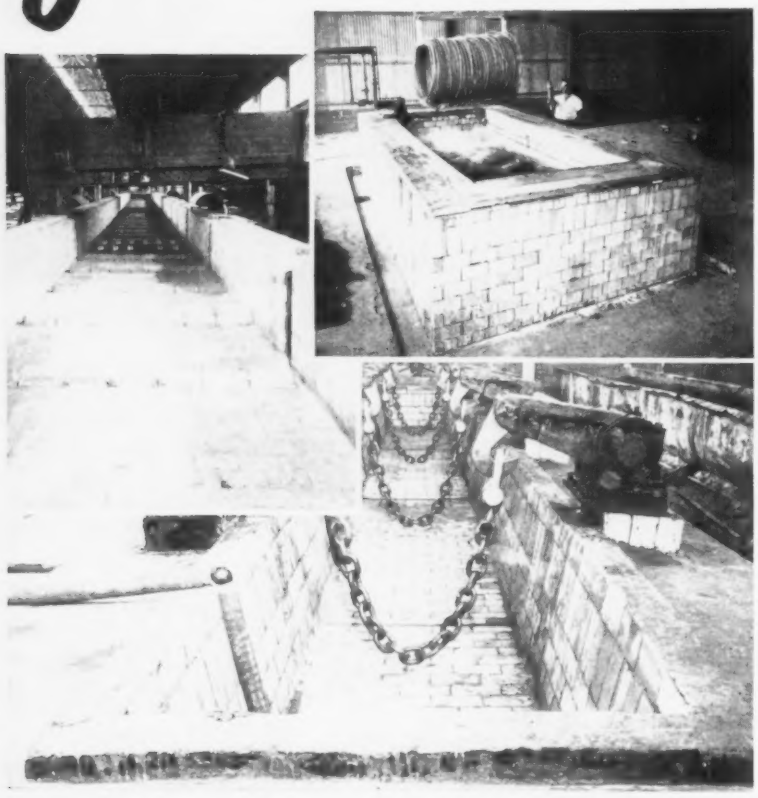
They Looked... and Chose

Atlas

FOR THEIR CORROSION-PROOF PICKLE TANK INSTALLATIONS



These modern processors of metals pictured above chose Atlas corrosion-proof cements and know-how for the construction of their pickling installations. Their decision was based on Atlas's long recognized experience in the field of Corrosion-Proof construction. From on-the-spot technical advice through complete installation facilities, Atlas can carry the job from beginning to end.

Regardless of your requirements, Atlas is prepared to design and construct any type of installation from the smallest batch pickler to the largest continuous pickling line.

Pickling tanks of Atlas construction reduce down-time to a minimum because Atlas corrosion-proof cements, coatings and linings are designed to handle the rugged abuse of modern pickling.

Look... and you will choose Atlas corrosion-proof construction for your next pickling installation.

Write for your copy of Bulletin CC-3 for complete information on the Atlas line.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

Counting Setup

A life of 300 million counts; count rate up to 60 per second; either electrical reset or manual reset by a single-stroke push bar; switch readout circuitry which makes possible very accurate programming; these are features of a new type electro-mechanical counter. The unit adds, subtracts, and totalizes. If add and subtract pulses are received simultaneously, a zero count results. It is not necessary to have any specific sequence of add or subtract impulses, nor will the counter jam from an incomplete pulse. The totalizer will operate best with a counting pulse ratio of 50 pct on, 50 pct off. While a square wave pattern for the pulse shapes is best, the totalizer will handle a wide variety of pulse shapes providing the leading edge of the wave is reasonably steep. (Autron Engineering).

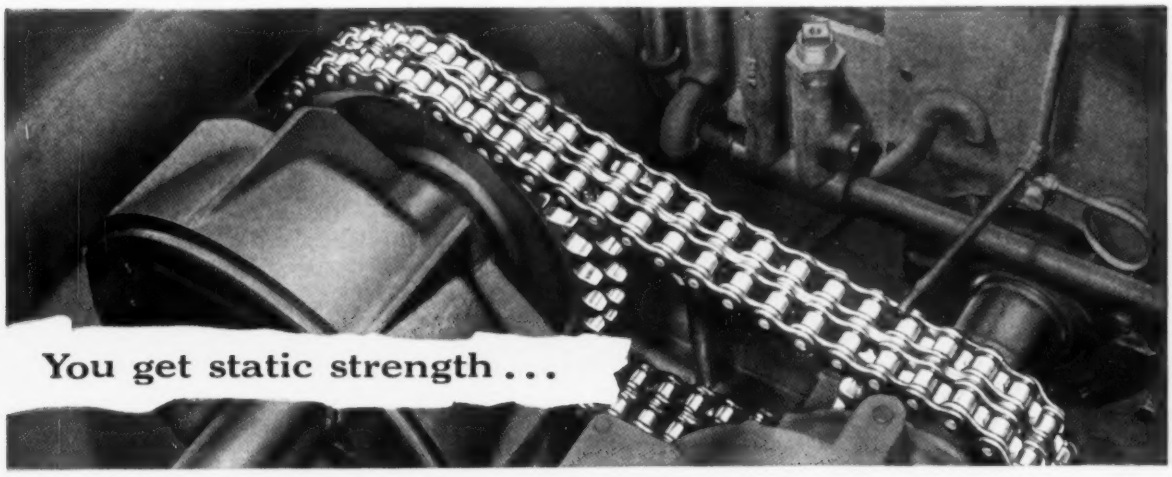
For more data circle No. 42 on postcard, p. 97

Dressing Unit

Especially made to reduce precision grinding-wheel dressing to a simple routine is a new dresser. Using the new device, grinding wheels can be dressed to any desired form at a rapid speed. Accuracy is insured by form-dressing at the wheel bottom, which is the point of contact for grinding. This eliminates errors on grinders where the spindle is not exactly true with the chuck. (Threadwell Tap & Die Co.)

For more data circle No. 43 on postcard, p. 97

Why tough-service drive and conveyor jobs demand LINK-BELT roller chain



RESISTANCE TO TENSILE STRESS is achieved with properly heat-treated, accurately machined side bars made of premium steel and fitted with properly hardened pins, bushings, rollers.

STRENGTH OF CHAIN IN MOTION results from such refinements as pitch-hole preparation, micro-finish of parts, special processing of side bars, pre-lubrication, rigid quality control.

THE *greater dynamic strength* found in Link-Belt precision steel roller chain is essential for long life on today's harder-working drives and conveyors. This added capacity to resist shock loads, centrifugal loads and similar stresses is achieved only because Link-Belt adds refinements in manufacture.

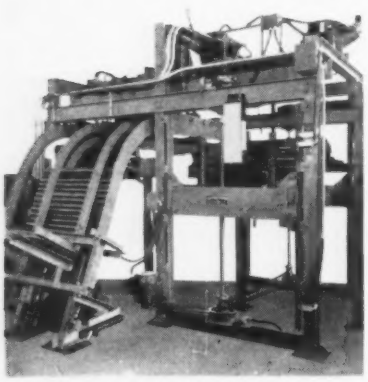
These include lock-type bushings, shot-peened rollers, pre-stressing, closer heat-treat control. The result: a precision chain that takes stresses in stride . . . provides smoother, more efficient performance that measurably outlasts ordinary roller chain — reduces costs.

For full data on Link-Belt roller chain, see your Link-Belt office or authorized stock-carrying distributor.

LINK-BELT

ROLLER CHAIN & SPROCKETS

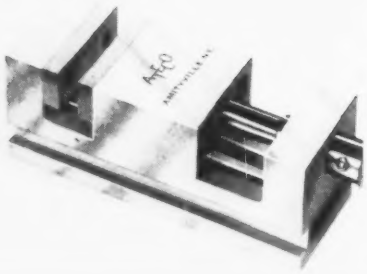
LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.472



Stacker Takes Cutoff Machine Work, Stacks It

Want an automatic unit that'll take your bars from a cutoff machine and stack them in a storage rack? Then this might be just what you're looking for. The stacker handles either tubes or bars and puts them in a place ready for delivery to the assembly line. Its design is simple. It needs no hydraulic or air connections either. An electric control panel houses a transformer, switches, relays and wiring necessary to operate the stacker. As the work is released by the cutoff machine, two angle slides direct it to the bottom of a slide. From here, a mechanical drive mechanism transports the work to a storage area for latter removal to the assembly area. The drive consists of a ball-bearing nut and screw driven by an electric motor. (Spurgeon Co.)

For more data circle No. 44 on postcard, p. 97



Toolmaker Vise Features Precision Ground Surfaces

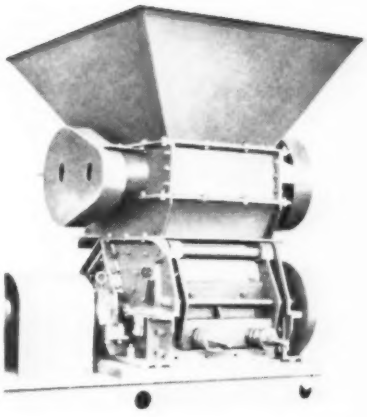
Precision ground on all external surfaces to an 0.0004-in. per inch accuracy, this toolmaker's vise comes in three models. These include: (1) a small vise with a jaw width of 1¼-in., depth of 7/16-in., jaw opening of 1-in., weight of 1¼-lb; (2) an in-between model with a jaw width of 1⅞-in., and (3) a large size with a jaw width of 2½-in. On all three, all parts except a totally enclosed leadscrew are hardened; the leadscrew, operated by a knurled handle or bar, is equipped with a dustproof means of oiling. (Air Transport Equipment, Inc.)

For more data circle No. 45 on postcard, p. 97

Metal Turnings Feeder Aids Scrap Recovery

Speeded-up scrap recovery is reported for this metal-turnings feeder. Designed to eliminate drawbacks of manual feeding, the unit is for use with metal-turnings crushing machines. It does away with slow-downs sometimes encountered while men watch for motor stalls while shoveling the scrap. An electrically controlled motor cuts on and off according to the load. Dual star wheels feed the metal turnings into the crushers until amp demand controls signal "enough"; then the feed shuts down temporarily until the surge load is passed. With a 2 to 3 cu yd capacity, the hopper doubles as a storage bin; this is because the feeder motor starts under full load. The hopper fits every size crusher from a ton to 20 tons per hour capacity. Its feeder is supported directly on the crusher. This means a space saving. (Jeffrey Mfg. Co.)

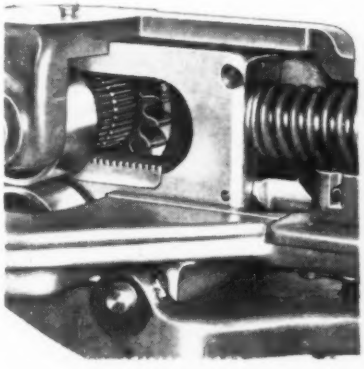
For more data circle No. 46 on postcard, p. 97



Automatic Punch Press Feed Makes Little Noise

Self-contained, a cam-operated 12-in. automatic punch press feed mounts to feed any type die. This includes piercing, blanking, compound, progressive or draw dies. The setup operates smoothly and silently, says its maker. Operating mechanically, temperature changes do not affect its accuracy. With feed and cam properly mounted, it is ready for operation. The feed needs no connection to the press' crankshaft; it uses almost all of the full 360° of press shaft rotation, feeding on the upstroke and also on the downstroke. This permits stock feeds to 12-in. per cycle, even on deep drawing or forming dies where only a fraction of the total press stroke is available for feeding purposes. (H. E. Dickerman Mfg. Co.)

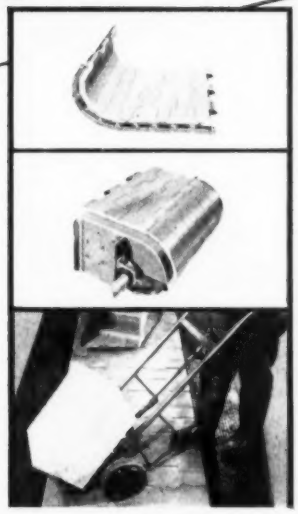
For more data circle No. 47 on postcard, p. 97



another *FIRST* by May-Fran

conveyor belting!

MOVING "SIDEWALK" WILL HANDLE WIDE RANGE OF MATERIALS



May-Fran proudly announces a new concept in materials handling . . . the May-Fran FLAT-TOP steel conveyor belt. Precision-forged steel plates interlock snugly to form a rugged, flat-surfaced conveyor belt ideal for assembling appliances, automobiles and other types of heavy products or for handling hot, heavy or rough materials. Special May-Fran link design forges the entire belt into a rugged, integral unit capable of negotiating either *concave* or *convex* curves—yet permits rapid assembly or disassembly.

Designed especially for flush-with-floor as well as extended surface mountings involving heavy-duty operations, the FLAT-TOP steel conveyor has no stationary or moving parts above the surface of the belt. In floor mounted applications, there are no aisle obstructions to disrupt normal plant traffic . . . employees and mobile equipment can safely cross the FLAT-TOP belt while it is moving. This special flat-deck design also permits the handling of materials that extend beyond the width of the belt.

The May-Fran FLAT-TOP is specifically engineered to provide all the advantages of old-fashioned slat-type belting while eliminating the disadvantages and safety hazards common to slat conveyors. Tightly meshed belt links prevent tools and small assembly parts from falling through the belt.

Write and tell us about your materials handling problem. May-Fran engineers will be happy to tailor a FLAT-TOP steel conveyor belt to your requirements.

For further details ask for special FLAT-TOP bulletin.

MAY-FRAN ENGINEERING, INC.

1698 Clarkstone Road • Cleveland 12, Ohio

7563-MF

Special Ⓑ Fasteners—Sample brochure sent upon request

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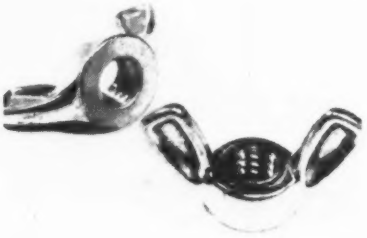
Many **GOOD** *products can be made* **BETTER** *. . . with* Ⓑ **SPECIAL FASTENERS**

NEW EQUIPMENT

Diecast Wing Nut

Wing nuts, diecast of zinc alloy on automatic machines, are lightweight and economical. The fasteners have wing spread from ¾ to 1⅛ in. Thread sizes range from No. 6 to ⅜-in. (NC-2 or NF-2), all



made to UTS specifications, These economical nuts also come with serrated bases (quantity permitting). This provides a locking action when the nut is seated; it does away with separate handling of a nut and lock washer. (Gries Reproducer Corp.)

For more data circle No. 48 on postcard, p. 97

Automatic Welder

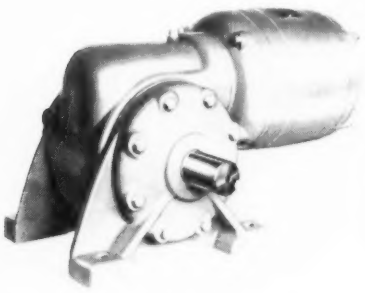
Fully automatic, a new precision radial fusion welder performs both circumferential and longitudinal welding. With single control console quick-change welding heads, it handles MIG (metallic inert gas), TIG (tungsten inert gas), and submerged arc setups. (Welduction Corp.)

For more data circle No. 49 on postcard, p. 97

Gear Motors

In capacities from ¼ through 5 hp, new right angle gear motors come in all enclosure types. Their gear case and motor housings are of heat-treated, cast aluminum. This material absorbs the high torque characteristic of gear motors, and has good transfer properties in addition to being corrosion-resistant. The worm wheel is hobbed from high-grade gear bronze, while the worm itself is of high-carbon steel which has been heat-treated and polished. High thrust and radial capacity is obtained through

tapered bearings on the output shaft. This assures alignment and avoids damaging pre-load condi-



tions. Ball-bearing construction is used throughout the rest of the motor. (Sterling Electric Motors, Inc.)

For more data circle No. 50 on postcard, p. 97

Stock Leveler

A new device removes curvature from coil stock. The stock leveler, for use with an air-feed mechanism, is non-powered. It's intended for use with a unit powerful enough to pull the coil stock through the straightening rolls. The unit removes curvature from stock up to 12-in. wide x 0.090-in. thick or 18-in. wide x 0.060-in. thick. It has three smooth finished rolls mounted on roller bearings. The upper roll adjusts to control stock flexing. (Special Engineering Service, Inc.)

For more data circle No. 51 on postcard, p. 97

Lever Puller

Looking for a safe, compact puller for lifting, lowering or dragging items? Well, here's a unit that fills the bill; light weight is its major asset. It comes in two capacities: ¼ and ½-ton models. With a detachable handle, the unit employs an oval-link chain, a square drive ratchet head in the operating handle and a friction holding brake. Designed for use where little headroom is sometimes a problem, the lever puller handles loads in both open and confined spaces. Its handle operates in any position of a complete circle. The hollow-tube handle bends warningly when overloaded; it breaks at 60-pct overload. (The Harrington Co.)

For more data circle No. 52 on postcard, p. 97

Chief of Engineers say:

"Heap big saving on die cost with

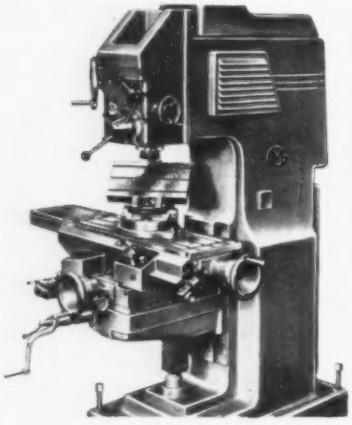
T-J CUTTERS!"

Smoke out facts—plain to see that Chief makes sense! T-J Cutters plenty rugged. Raise um feed. Reduce um die cost. Follow trail of many tribes—use T-J for tough die sinking milling. Chief knows you will like! Sign treaty now for T-J Cutters. Good medicine for high production, lower costs!

Yes, T-J makes the kind of he-man Cutters you need. Designed for speed, accuracy and long life . . . less breakage . . . more work between grinds! Made from an extremely high grade steel . . . properly machined . . . scientifically heat-treated and accurately ground. Wide range of styles and sizes. Send smoke signal or write for new catalog No. 1055. The Tomkins-Johnson Co., Jackson, Mich.

T-J TOMKINS-JOHNSON

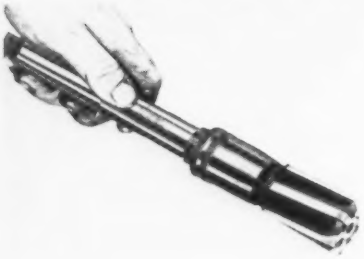
RIVITORS..AIR AND HYDRAULIC CYLINDERS..CUTTERS..CLINCHORS



Jigborer Has Optical Readings in Tenths

The work table of this new model jigborer positions longitudinally and crosswise in accordance with readings in 0.0001-in. Optical setting devices scanning precision scales located in its saddle and knee assure these readings. Table size is 33½ x 12 in. Table movements are 21½ x 12¼ in. Lead-screw nuts are adjustable for elimination of wear. Spindle drive is by a 2½-hp, alternating current motor with infinitely variable spindle speeds ranging from 96 to 1720 rpm. The spindle has a No. 30 ASA taper and a quick-acting tool retainer nut. Power feed at three rates is provided for 5½-in. boring depth. The machine can be equipped with a coolant system, a machining light fixture, an optical centering device and a variety of vises or other workholding devices. G. Matheys of Brussels, Belgium, makes it. (Triplex Machine Tool Corp.

For more data circle No. 53 on postcard, p. 97



Chatterproof Reamer Works at Production Speeds

Chatter-proof hole reaming at consistent production speeds is claimed for this micrometer reamer. It is easily adjustable and the interchangable blades are made to close tolerances. So also are all other components of the tool. It adjusts to any diameter within its range in less than one minute without removal from the machine. Blades are of 22-pct tungsten steel. Graduations are clearly marked. (Wharton Unitools.)

For more data circle No. 54 on postcard, p. 97

ASK ABOUT

MICCROSOL

for Corrosion Resistant

Coatings on Tanks,

Ducts, Housings, Racks, etc.

MICHIGAN CHROME
and Chemical Company

8615 GRINNELL AVENUE
DETROIT 13, MICHIGAN

MUNDT

PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can perforate almost any size perforation in any kind of metal or material required. Send us your specifications.

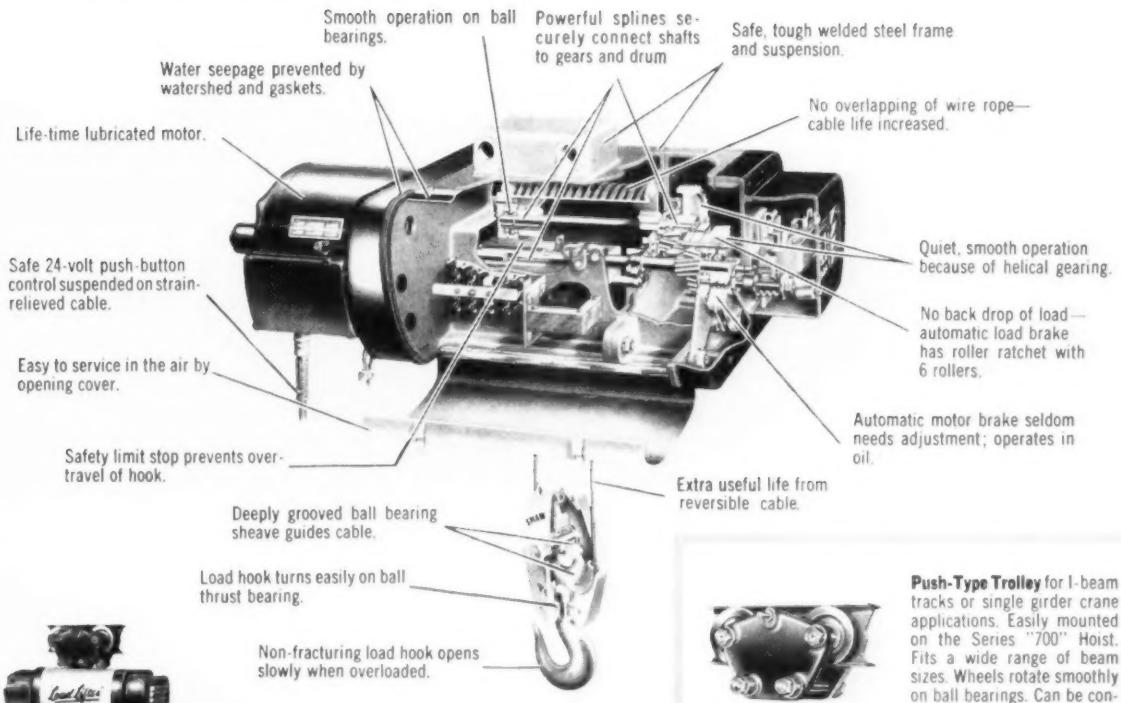
Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

Write for New Catalog of Patterns

TIN, STEEL, COPPER, ALUMINUM, BRONZE
BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
56 FAIRMOUNT AVE. JERSEY CITY, N. J.

Here's Why the 'Load Lifter'® Stays on the Job

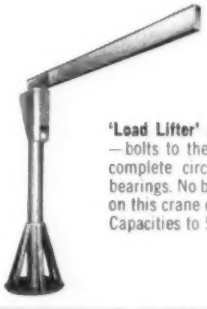

Smooth operation on ball bearings.
Powerful splines securely connect shafts to gears and drum
Safe, tough welded steel frame and suspension.
Water seepage prevented by watershed and gaskets.
No overlapping of wire rope—cable life increased.
Life-time lubricated motor.
Quiet, smooth operation because of helical gearing.
Safe 24-volt push-button control suspended on strain-relieved cable.
No back drop of load—automatic load brake has roller ratchet with 6 rollers.
Easy to service in the air by opening cover.
Automatic motor brake seldom needs adjustment; operates in oil.
Safety limit stop prevents over-travel of hook.
Extra useful life from reversible cable.
Deeply grooved ball bearing sheave guides cable.
Load hook turns easily on ball thrust bearing.
Non-fracturing load hook opens slowly when overloaded.

The Series "700" 'Load Lifter' Electric Hoist is built for heavy-duty service. Simple design reduces maintenance requirements. It is a low headroom hoist with high hook lift. It is fast. A ton can be lifted at 60 FPM speed. The two automatic brakes operate simultaneously. This means fast stops that permit precise spotting of loads. Each brake alone can hold the full load. Safety devices protect the operator, the load and the hoist itself. Ball bearings minimize frictional drag and power consumption.

The Series "700" 'Load Lifter' is demonstrating its superb performance every day in large and small plants. The same reliability, convenience and economy can be yours. Capacities: ½ to 15 tons. Where fragile loads must be handled, models with two speeds, one 3 times faster than the other, are commonly used. All types of suspension available: lug, push-type trolley, hand-geared trolley, and motor-driven trolley. **Check with your "Shaw-Box" Distributor for details or write us for Bulletin 410.**

Push-Type Trolley for I-beam tracks or single girder crane applications. Easily mounted on the Series "700" Hoist. Fits a wide range of beam sizes. Wheels rotate smoothly on ball bearings. Can be converted to a hand-geared trolley in the field.

Motor-Driven Trolley. Provides effortless hoist travel at the push of a button. Available for Series "700" 'Load Lifter' Hoists already in service. New hoists can be so equipped before shipment; no additional assembly required.



'Load Lifter' Jib Crane. Self supporting—bolts to the floor. Revolves through a complete circle. Swings easily on ball bearings. No binding. A 'Load Lifter' Hoist on this crane can serve a 550 sq. ft. area. Capacities to 5 tons.

57G-2

MAXWELL MANNING M&M & MOORE INC. TRADE MARK

'Load Lifter'® ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.

SHAW-BOX CRANE & HOIST DIVISION

382 West Broadway • Muskegon, Michigan

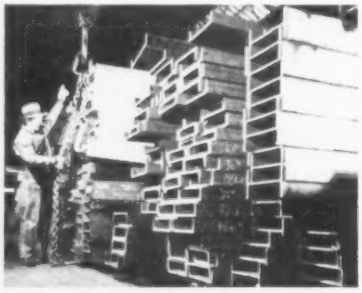
Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.

REPORT FROM RYERSON
on Services and Products in Stock

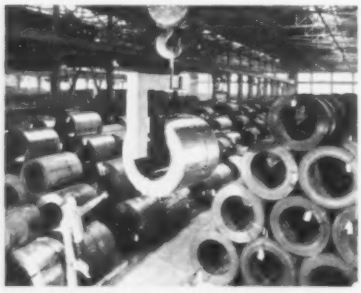
In addition to the products shown below, you can call on Ryerson for flame-cut steel shapes, fabricated steel for reinforced concrete or steel frame construction—many other products and services. And equally important are the specialists who carry out the Ryerson quality control program —see that customers specifications are *exactly* met, that every order is correctly filled and promptly delivered. As a result you get unequalled service and certified quality when your company calls Ryerson for steel, aluminum, industrial plastics and machinery.

CARBON STEEL & ALLOY BARS
Most complete range of types, shapes and sizes as well as largest tonnage.

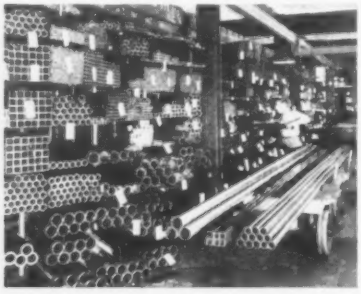


STRUCTURALS—I-beams, H-beams, channels, angles, tees and zees—all high quality steel to ASTM spec. A-7.

PLATES—14 types including special low carbon steel plates for forming and welding, leaded New E-Z-Cut, etc.

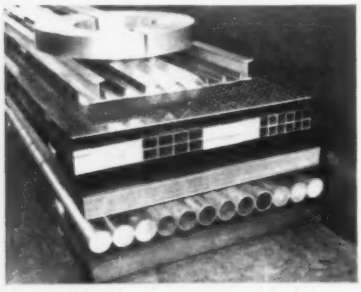


SHEET STEEL & STRIP—More than 20 different types in pattern sizes, cut-to-order sizes, strip coils, etc.



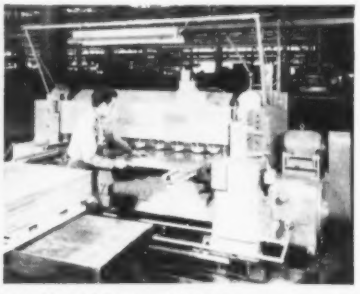
TUBING—Seamless and welded steel tubing—mechanical tubing, fluid line, pump cylinder and structural tubing.

STAINLESS STEEL—Allegheny stainless in over 2,221 sizes, shapes, types, finishes: sheets, plates, bars, pipe, etc.



ALUMINUM—At many Ryerson plants —sheets, coils, plates, bars, tubing, architectural and structural shapes, etc.

INDUSTRIAL PLASTICS—PVC pipe, fittings, sheets and rods, rigid Kralastic and flexible polyethylene pipe.



MACHINERY & TOOLS—The broadest line of metal-working equipment available from a single source.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

The Iron Age Summary

Market Breakthrough Indicated

Better showing in July could sow seeds of stronger market to come.

Big push in last half could make 1957 production and consumption a record.

■ The long-awaited break-through in the steel market may already be underway. July—for weeks tabbed as the low-point for steel this year—may in reality sow the seeds of an upturn that could carry through the fourth quarter.

The pattern of industrial vacation and inventory plans still dictates that July steel production will form the bottom of the trough. But more observers are coming around to the realization that July will not be as low as had been indicated earlier.

It All Depends—In fact, July production among the larger companies could be anywhere from 3 to 8 points higher than expected as recently as a month ago. It will depend on individual company product mix and whether some of the old-time salesmen are still around to push for orders.

If July's better showing is the start of a last-half push for steel, 1957 may turn out to be a record year for steel production and use. It wouldn't take much to exceed last year's 115 million ingot tons, and 1955's record 117 million tons could be equaled or exceeded.

Experts Confounded—Since July is generally accepted as the key month for the year, the improvement in the outlook has confounded some of the forecasters who had been adopting a pessimistic tone for the third quarter, and the year as a whole.

Apart from the strength shown by construction, oil and gas, shipbuilding, freight cars, and capital goods equipment, the automotive market could catch fire at any moment. Some slight flutterings have already appeared from Detroit. Part of it is due to trial orders for the new models, but part could be due to the need for tonnages to fill in depleted inventories.

Auto Pickup—Shipments to the automotive industry probably will be up in the last half for more than one reason. Should car sales pick up, it would be an added bonus for the mills. Here are some of the factors that could bring on a spurt of automotive buying:

(1) Inventories are low, (2) the automotive Big Three are in a tough competitive battle, (3) General Motors will go all-out to make a good showing in its 50th anniversary year, (4) Ford and Chrysler will be out to hold onto their increased share of the overall market, and (5) the auto companies will be building up dealer inventories toward year end and in first half '58 as a hedge against labor trouble should new contract negotiations break down.

It all adds up to an improved outlook for the last half.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	1,920	2,202	2,266	356
Ingot Index				
(1947-1949=100)	119.5	137.0	141.0	22.2
Operating Rates				
Chicago	81.0	84.0	86.0	5.0
Pittsburgh	84.0	89.0*	88.5	6.0
Philadelphia	96.0	97.0	101.0	5.0
Valley	60.5	73.5*	73.0	13.0
West	102.0	104.0*	103.0	24.0
Buffalo	89.0	102.0	102.0	5.0
Cleveland	72.0	88.0*	89.0	0.0
Detroit	98.0	99.0	100.0	25.0
S. Ohio River	78.0	81.0	89.0	63.0
South	93.0	93.0	93.0	3.5
Upper Ohio R.	66.0	83.5*	84.5	58.0
St. Louis	80.0	74.0	84.0	68.0
Northeast	66.5	66.5	66.5	47.0
Aggregate	75.0	86.0	88.5	14.5

*Revised

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.670	5.670	5.670	5.179
Pig Iron (Gross ton)	$64.56	$64.56	$64.56	$60.29
Scrap, No. 1 hvy (Gross ton)	$54.50	$54.83	$50.83	$44.83
Nonferrous				
Aluminum ingot	27.10	27.10	27.10	25.90
Copper, electrolytic	29.25	29.25	32.00	46.00
Lead, St. Louis	13.80	13.80	14.80	15.80
Magnesium ingot	36.00	36.00	36.00	34.50
Nickel, electrolytic	74.00	74.00	74.00	64.50
Tin, Straits, N. Y.	97.375	97.50	98.375	94.75
Zinc, E. St. Louis	10.50	10.50	11.50	13.50

*Revised

Forgings Prices Are Headed Up

Steel price increases will have to be passed on, even though the market is none too strong.

A recent flurry of orders has lengthened lead time for some types of forgings.

▪ Forgings sales, particularly of light forgings, began showing signs of a mild gain 30 days ago and this mild upward movement now seems to be gaining.

Light forgings can be obtained on a 30-day delivery, though in a few cases deliveries have extended to as much as 45 days, largely as a result of the mild business increase of the past month. Drop forgings are available on 10-week delivery, open die material can be obtained as quickly as two weeks, but this is less common than was the case 30 days ago.

But Business Is Off—This certainly doesn't take forgings out of the hole. Light forgings are off from 20-30 pct from year ago sales, and have much ground to recover. Biggest hole in the 1957 sales picture has been the loss of automotive business, and thus far this important segment of the market is still not active. The heavy forgings field has been far stronger, but even here declines from year ago levels run to as much as 15 pct.

Aircraft forgings generally have dropped in volume during first-half 1957, but it is felt that second-half will see a considerably stronger picture. Farm equipment forgings purchases have already shown a strong gain and this seems to be holding and at least several farm equipment manufacturers will probably step up their light forgings purchases again during second half.

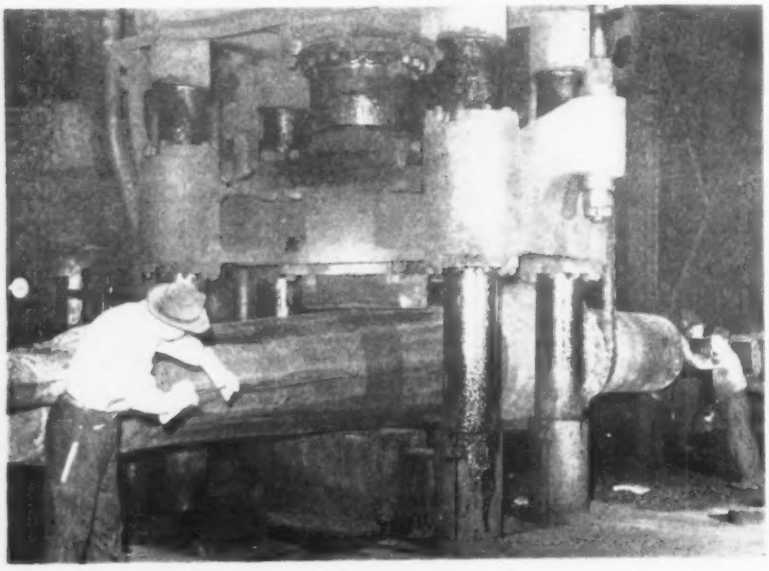
Prices Headed Up — A strong movement in titanium, inconel, and other high cost forgings is expected to boost overall dollar volume for the industry to 1956 levels and possibly higher. This, coupled with strengthened automotive industry forgings purchases in second half, make the second half of the year look good from a dollar standpoint, and considerably better than the first six months.

Pricewise, the steel markup will be reflected directly in finished forgings, costs. An upward shift in forgings prices is expected to follow, on the basis of increases in the base price of steel, since some extra price increases have already been absorbed and forgers feel they've stretched their profit margin about as far as is safe.

No Inventory Buildup—Despite the probability of a direct increase in forgings prices, there seems very little tendency on the part of consumers to build inventory of finished forgings, even in industries where there are no product metal changes and it would be safe to put down some material.

The Outlook—At the moment, the forging industry isn't pushing hard at expansion. A number of expansions programs were initiated in the past two years and there is still work to be done under these programs, so that the industry is still gaining capacity. But the steam pressure exhibited in 1955 and early 1956 seems to have fallen. Only a handful of plants are pulling new schemes off the drawing boards and initiating new construction contracts.

1956 was a drop for the industry generally, the amount of fall amounting to about a 28.5 pct drop. First half 1957 suggests another drop, though not of these proportions, since there was a considerable inventory buildup of forgings at the consumer level in late 1955.



SIGNS OF FIRMNESS: Sales are off from last year. A flurry of activity makes second half look better. A. Finkl & Sons Co. photo.

Steel Prices Rise $6 Per Ton

■ Following are new mill prices of U. S. Steel, effective at 12.01 a. m., July 1. Prices are in dollars per net ton unless otherwise noted. Extras apply.

	New Price	Old Price	Increase
CARBON STEEL:			
Ingots, forging	73.50	70.50	3.00
blooms, billets, slabs, forging	96.00	91.50	4.50
Blooms, billets, slabs, rerolling	77.50	74.00	3.50
Skelp	97.50	92.50	5.00
Tube rounds	117.50	111.50	6.00
Standard bars and small shapes	108.50	101.50	7.00
Fairless Works	111.50	104.50	7.00
Special quality bars	115.50	108.50	7.00
Fairless Works	118.50	111.50	7.00
Cold-finished bars	146.00	137.00	9.00
Concrete rein bars	108.50	101.50	7.00
Fairless Works	111.50	104.50	7.00
Structural shapes	105.50	100.00	5.50
CB's (including CBL, CJB and CB sections)	105.50	100.00	5.50
Bearing piles (CBP sections)	105.50	100.00	5.50
Sheet piling	124.50	118.00	6.50
Plates	102.00	97.00	5.00
Floor plates	123.50	118.50	5.00
Standard T. Rails No. 1 O. H.	110.50	105.50	5.00
Light rails	130.00	125.00	5.00
Tie plates	132.00	125.50	6.50
Joint bars for standard rails	139.50	132.00	7.50
Track spikes	195.00	184.50	10.50
Axles	175.50	167.00	8.50
Hot-rolled strip	98.50	93.50	5.00
Hot-rolled sheets (18 ga and heavier)	98.50	93.50	5.00
Fairless Works	99.50	94.50	5.00
Cold-rolled sheets	121.00	115.00	6.00
Fairless Works	122.00	116.00	6.00
Galvanized sheets, regular	132.00	126.00	6.00
Vitrenamel sheets	132.50	126.50	6.00
HIGH STRENGTH PRODUCTS:			
USS COR-TEN			
Structural shapes	155.00	147.00	8.00
CB sections	155.00	147.00	8.00
Plates	152.50	145.00	7.50
HR bars, small shapes	158.50	148.50	10.00
Hot-rolled sheets	145.50	138.00	7.50
Fairless Works	146.50	139.00	7.50
Galvanized sheets	194.50	185.50	9.00
Cold-rolled sheets	179.50	170.50	9.00
Fairless Works	180.50	171.50	9.00
Hot-rolled strip	146.50	139.00	7.50
USS MAN-TEN			
Structural shapes	130.50	125.00	5.50
CB sections	130.50	125.00	5.50
Plates	128.00	123.00	5.00
HR bars, small shapes	133.50	122.50	11.00
Hot-rolled sheets	121.50	116.50	5.00
Fairless Works	122.50	117.50	5.00
Hot-rolled strip	121.50	116.50	5.00
USS ABRASION RESISTING			
Plates	135.00	125.00	10.00
HR bars, small shapes	143.50	129.50	14.00
Hot-rolled sheet	132.50	122.50	10.00
Hot-rolled strip	132.50	122.50	10.00
USS MAN-TEN S			
Structurals	139.50	134.00	5.50
CB sections	139.50	134.00	5.50
Plates	137.00	132.00	5.00
Bars and small shapes	142.50	131.50	11.00
Hot-rolled sheets	130.50	125.50	5.00
Fairless Works	131.50	126.50	5.00
Hot-rolled strip	130.50	125.50	5.00

	New Price	Old Price	Increase
WIRE PRODUCTS:			
Wire rods carbon			
Donora, Cleveland, Joliet, and Fairfield	123.00	116.00	7.00
Worcester	129.00	122.00	7.00
Cold-rolled low carbon strip			
Cleveland	143.00	137.00	6.00
Worcester	154.00	148.00	6.00
Wire—Mfrs. coarse bright, low carbon			
Cleveland, Donora, Joliet, Duluth, Rankin, Waukegan and Fairfield	153.00	144.00	9.00
Worcester	159.00	150.00	9.00
Premier spring wire high carbon			
Cleveland, Donora, Duluth and Waukegan	186.00	174.00	12.00
New Haven, Trenton and Worcester	192.00	180.00	12.00
MB spring wire-high carbon			
Cleveland, Donora, Duluth and Waukegan	186.00	180.50	5.50
Trenton and Worcester	192.00	186.50	5.50
Wire—merchant quality annealed			
Cleveland	173.00	164.00	9.00
Donora, Duluth, Joliet, Rankin and Fairfield	173.00	164.00	9.00
Worcester	179.00	170.00	9.00
Wire—merchant quality galvanized			
Donora, Duluth, Joliet, Rankin and Fairfield	184.00	175.00	9.00
Worcester	190.00	181.00	9.00
Nails			
Donora, Duluth, Joliet, Rankin, Fairfield	Col 173	Col 164	9
Worcester	Col 179	Col 170	9
Wire—barbed			
Donora, Duluth, Joliet, Rankin and Fairfield	Col 193	Col 184	9

PURCHASING AGENT'S CHECKLIST

Steel prices go up $6 a ton. Here are the reasons why. **P. 38**

Look for a last-half spurt in television sales. **P. 40**

Enameled aluminum use grows. Producers go after new markets. **P. 41**

Inflation: No check in sight. **P. 42**

	New Price	Old Price	Increase
Woven-fence			
Donora, Duluth, Joliet, Rankin and Fairfield	Col 187	Col 176	11
Bale-ties			
Donora, Duluth, Joliet, and Fairfield	Col 212	Col 196	16
Polished staples			
Donora, Duluth, Joliet, Rankin and Fairfield	Col 175	Col 164	11
Worcester	Col 181	Col 170	11
ALLOY STEEL:			
Ingots (net ton)	77.00	74.00	3.00
Billets, blooms, slabs	114.00	107.00	7.00
Hot-rolled bars	129.50	122.50	7.00
Fairless Works	132.50	125.50	7.00
Cold-rolled bars			
Donora, Cleveland, Waukegan	175.50	166.50	9.00
Worcester	181.50	172.50	9.00
Plates	144.00	137.00	7.00
Structurals and bar shapes	131.00	124.00	7.00
Hot-rolled strip and sheet	162.00	155.00	7.00
OTHER ITEMS:			
Electrical sheets			
Cut lengths, 22 ga.	236.00	220.00	16.00
Electrical grade fully processed c-r coils, cut lengths	241.00	230.50	10.50
Long ternes	140.00	134.00	6.00

PIPE AND TUBULAR PRODUCTS:	Increase
Buttweld standard and line pipe, black and galvanized	
½" - 4"	$ 8.00
Seamless standard and line pipe, black and galvanized	
2⅜" - 24" OD	$ 8.00
Seamless and electric weld line pipe	
26" - 36" OD	$ 6.50
Electric weld line pipe	
24" OD	$ 8.00
Oil country casing	
Grade J55, Short T and C (all sizes)	$ 9.50
Oil country tubing	
Grade J55, Upset T and C (all sizes)	$10.25
Drill pipe	
Grade D (Internal upset) all sizes	$15.50
Seamless pressure and mechanical tubing	
Carbon	Increased approximately 5.5 pct
Alloy	Increased approximately 4.5 pct
Stainless steels	
Mill prices, bases and extras, are increased about 4 pct	

Industrial Bidding Firms the Market

Automotive lists close at figures well over last month's, surprising much of the scrap trade.

Market firming in Midwest contrasts with decline along East Coast.

■ The market took on a stiffer tone in the Midwest and expected price declines failed to materialize in the face of tough dealer resistance.

Surprisingly stiff bidding for industrial lists led the recovery from what appeared to be a very soft market a week ago. Mills not only bid well over a month ago on first lists to close, but raised their bidding on later lists.

As a result, Detroit automotive lists closing late brought several dollars over first lists to close. Railroad grades also failed to drop in line with secondary steelmaking grades. All in all, the market for premium grades continues strong, probably indicating that mills are not overlong on inventory.

Eastern markets, however, looked considerably weaker and lower prices showed up in Philadelphia and New York.

Much of the activity, particularly in the Midwest, is at the dealer-broker level. Mills in many cases are still out of the market in spite of the aggressive bidding on industrial lists.

With Chicago and Pittsburgh markets holding firm, the Philadelphia weakness brought THE IRON AGE Composite Price down to $54.50, compared with $54.83 a week ago.

Pittsburgh—The market here has a stiffer tone again although most of the action is at the dealer-broker level and there is no clear-cut trend yet. Local industrial bundles went for about $5 over last month's figures. Dealers have been reported paying over the mill price for good scrap. At the same time, one mill is offering $46 dollars for No. 2 bundles, or $2 under the quoted price. A major consumer is also talking about paying $2 under its last prices. Over-all market is still strong, particularly for best grades.

Chicago—Despite several strong bids for factory scrap, the market continues to sag in an absence of mill buying. A purchase of No. 1 heavy melting at $53 failed to peg the market and new orders were written almost immediately at $52. Mill offers have failed to bring down railroad grades at the same sharp rate of decline that has been experienced in steelmaking grades.

Philadelphia—A softening domestic market due in part to oncoming vacation shutdowns has caused a $1 drop in the price of steelmaking grades. Local mills are not showing any interest in new scrap orders. Export activity is keeping prices from dropping further on the domestic front.

New York—Prices of steelmaking and blast furnace grades have fallen $2 per ton in this market. Cast prices are unchanged so far. Lower prices reflect declining orders from local mills. Some brokers are afraid turnings contracts will be cancelled.

Detroit—Scrap has taken another jump. Industrial lists are up, with latest list to close about $4 over a month ago. Dealer prices are up $1 on appraisal of the apparent market strength. First lists to close were up about $2 per ton above last month's level, with later lists up even more.

Cleveland—Mills here and in the Valley are still out of the market. Early industrial lists showed no weakening and the market has a firmer tone at the broker level. However, the absence of mill buys and erratic market action outside the district are making for uncertainty.

St. Louis — Inclement weather conditions are halting the collection of scrap in this area. As a result of the poor collections, the expected break in prices failed to materialize. Prices are unchanged, pending committments to be made after the July 4 holiday.

Birmingham—There is little buying of scrap here, with everyone waiting to see how the market will go. Mill buying is nominal, and exporting appears to be marking time waiting for railroad and industrial lists.

Cincinnati—Scrap prices are up $3 to $5 on the basis of new mill activity in this market. The market has tightened up, although the extent of the increase took some of the trade by surprise.

Buffalo—Prices are unchanged, although the market is not active. The market is weakened somewhat by the shutting down of all seven openhearths at one mill.

Boston—Prices of No. 1 steelmaking grades are up $1. However, as the vacation season sets in, the trade expects little increase in activity although prices are firm.

West Coast—Exporting is at its slowest pace in many months, permitting mills to obtain scrap to meet their requirements. However, flow of scrap is slow.

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SCRAP PRICES *(Effective June 30, 1957)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$56.00 to $57.00
No. 2 hvy. melting	51.00 to 52.00
No. 1 dealer bundles	56.00 to 57.00
No. 1 factory bundles	62.00 to 63.00
No. 2 bundles	47.00 to 48.00
No. 1 busheling	56.00 to 57.00
Machine shop turn.	33.00 to 34.00
Mixed bor. and ms. turn.	33.00 to 34.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	37.00 to 38.00
Low phos. punch'gs plate	62.00 to 63.00
Heavy turnings	52.00 to 53.00
No. 1 RR. hvy. melting	61.00 to 62.00
Scrap rails, random lgth.	67.00 to 68.00
Rails 2 ft and under	70.00 to 71.00
RR. steel wheels	69.00 to 70.00
RR. spring steel	69.00 to 70.00
RR. couplers and knuckles	69.00 to 70.00
No. 1 machinery cast	57.00 to 58.00
Cupola cast	48.00 to 49.00
Heavy breakable cast	46.00 to 47.00

Chicago

No. 1 hvy. melting	$51.00 to $52.00
No. 2 hvy. melting	44.00 to 45.00
No. 1 dealer bundles	52.00 to 53.00
No. 1 factory bundles	57.00 to 58.00
No. 2 bundles	41.00 to 42.00
No. 1 busheling	51.00 to 52.00
Machine shop turn.	32.00 to 33.00
Mixed bor. and turn.	34.00 to 35.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	34.00 to 35.00
Low phos. forge crops	60.00 to 61.00
Low phos. punch'gs plate	56.00 to 57.00
Low phos. 3 ft and under	54.00 to 55.00
No. 1 RR. hvy. melting	57.00 to 60.00
Scrap rails, random lgth.	70.00 to 71.00
Rerolling rails	76.00 to 77.00
Rails 2 ft and under	75.00 to 76.00
Locomotive tires cut	62.00 to 63.00
Cut bolsters & side frames	63.00 to 64.00
Angles and splice bars	66.00 to 67.00
RR. steel car axles	82.00 to 83.00
RR. couplers and knuckles	60.00 to 61.00
No. 1 machinery cast	50.00 to 51.00
Cupola cast	47.00 to 48.00
Heavy breakable cast	44.00 to 45.00
Cast iron brake shoe	46.00 to 47.00
Cast iron wheels	53.00 to 54.00
Malleable	61.00 to 62.00
Stove plate	46.00 to 47.00
Steel car wheels	62.00 to 63.00

Philadelphia Area

No. 1 hvy. melting	$55.00 to $56.00
No. 2 hvy. melting	47.00 to 48.00
No. 1 dealer bundles	55.00 to 56.00
No. 2 bundles	48.00 to 50.00
No. 1 busheling	55.00 to 56.00
Machine shop turn.	38.00 to 39.00
Mixed bor. short turn.	38.00 to 39.00
Cast iron borings	38.00 to 39.00
Shoveling turnings	41.00 to 42.00
Clean cast chem. borings	45.00 to 46.00
Low phos. 5 ft and under	59.00 to 60.00
Low phos. 2 ft and under	60.00 to 61.00
Low phos. punch'gs	60.00 to 61.00
Elec. furnace bundles	58.00 to 59.00
Heavy turnings	51.00 to 52.00
RR. steel wheels	65.00 to 66.00
RR. spring steel	65.00 to 66.00
Rails 18 in. and under	71.00 to 72.00
Cupola cast	48.00 to 49.00
Heavy breakable cast	54.00 to 55.00
Cast iron car wheels	59.00 to 60.00
Malleable	61.00 to 62.00
Unstripped motor blocks	43.00 to 44.00
No. 1 machinery cast	56.00 to 57.00

Cleveland

No. 1 hvy. melting	$51.00 to $52.00
No. 2 hvy. melting	46.00 to 47.00
No. 1 dealer bundles	51.00 to 52.00
No. 1 factory bundles	56.00 to 57.00
No. 2 bundles	41.00 to 42.00
No. 1 busheling	51.00 to 52.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	26.00 to 27.00
Cut struct'r'l & plates, 2 ft & under	58.00 to 59.00
Drop forge flashings	51.00 to 52.00
Low phos. punch'gs, plate	53.00 to 54.00
Foundry steel, 2 ft & under	49.00 to 51.00
No. 1 RR. heavy melting	57.00 to 58.00
Rails 2 ft and under	72.00 to 73.00
Rails 18 in. and under	73.00 to 74.00
Railroad grate bars	35.00 to 36.00
Steel axle turnings	33.00 to 34.00
Railroad cast	56.00 to 57.00
No. 1 machinery cast	55.00 to 56.00
Stove plate	49.00 to 50.00
Malleable	62.00 to 63.00

Youngstown

No. 1 hvy. melting	$54.00 to $55.00
No. 2 hvy. melting	49.00 to 50.00
No. 1 dealer bundles	54.00 to 55.00
No. 2 bundles	46.00 to 47.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	27.00 to 28.00
Low phos. plate	56.00 to 57.00

Buffalo

No. 1 hvy. melting	$45.00 to $46.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 busheling	45.00 to 46.00
No. 1 dealer bundles	45.00 to 46.00
No. 2 bundles	35.00 to 36.00
Machine shop turn.	28.00 to 29.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	31.00 to 32.00
Low phos. plate	49.00 to 50.00
Scrap rails, random lgth.	56.00 to 57.00
Rails 2 ft and under	66.00 to 67.00
RR. steel wheels	53.00 to 54.00
RR. spring steel	49.00 to 50.00
RR. couplers and knuckles	49.00 to 50.00
No. 1 machinery cast	50.00 to 51.00
No. 1 cupola cast	45.00 to 46.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$47.00 to $48.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	47.00 to 48.00
No. 2 bundles	35.00 to 36.00
No. 1 busheling	47.00 to 48.00
Drop forge flashings	47.00 to 48.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	29.00 to 30.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	29.00 to 30.00
Low phos. punch'gs plate	47.00 to 48.00
No. 1 cupola cast	48.00 to 49.00
Heavy breakable cast	44.00 to 45.00
Stove plate	45.00 to 46.00
Automotive cast	54.00 to 55.00

St. Louis

No. 1 hvy. melting	$45.50 to $46.50
No. 2 hvy. melting	43.00 to 44.00
No. 1 dealer bundles	47.00 to 48.00
No. 2 bundles	38.00 to 39.00
Machine hop turn.	30.00 to 31.00
Cast iron borings	31.00 to 32.00
Shoveling turnings	31.00 to 32.00
No. 1 RR. hvy. melting	55.50 to 56.50
Rails, random lengths	66.00 to 67.00
Rails 18 in. and under	73.00 to 74.00
Locomotive tires uncut	59.00 to 60.00
Angles and splice bars	62.00 to 63.00
Std. steel car axles	72.00 to 73.00
RR. Specialties	61.00 to 62.00
Cupola cast	45.00 to 46.00
Heavy breakable cast	41.00 to 42.00
Cast iron brake shoes	43.00 to 44.00
Stove plate	43.50 to 44.50
Cast iron car wheels	49.00 to 50.00
Rerolling rails	71.00 to 72.00
Unstripped motor blocks	40.00 to 41.00

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$45.00 to $46.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	45.00 to 46.00
No. 2 bundles	35.00 to 36.00
No. 1 busheling	45.00 to 46.00
Elec. furnace, 3 ft & under	49.00 to 50.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and short turn.	28.00 to 29.00
Shoveling turnings	29.00 to 30.00
Clean cast. chem. borings	32.00 to 33.00
No. 1 machinery cast	42.00 to 43.00
Mixed cupola cast	34.00 to 35.00
Heavy breakable cast	42.00 to 43.00
Stove plate	32.00 to 33.00
Unstrip ed motor blocks	31.00 to 32.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$51.00 to $52.00
No. 2 hvy. melting	41.00 to 42.00
No. 2 dealer bundles	40.00 to 41.00
Machine shop turn.	27.00 to 28.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	30.00 to 31.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	46.00 to 47.00
Mixed yard cast	41.00 to 42.00
Charging box cast	46.00 to 47.00
Heavy breakable cast	46.00 to 47.00
Unstripped motor blocks	33.00 to 34.00

Birmingham

No. 1 hvy. melting	$49.00 to $50.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 dealer bundles	49.00 to 50.00
No. 2 bundles	37.00 to 38.00
No. 1 busheling	49.00 to 50.00
Machine shop turn.	35.00 to 36.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	28.00 to 29.00
Electric furnace bundles	50.00 to 51.00
Elec. furnace, 3 ft & under	47.00 to 48.00
Bar crops and plate	54.00 to 55.00
Structural and plate, 2 ft	54.00 to 55.00
No. 1 RR. hvy. melting	53.00 to 54.00
Scrap rails, random lgth.	59.00 to 60.00
Rails, 18 in. and under	65.00 to 66.00
Angles & splice bars	59.00 to 60.00
Rerolling rails	66.00 to 67.00
No. 1 cupola cast	53.00 to 54.00
Stove plate	53.00 to 54.00
Charging box cast	34.00 to 35.00
Cast iron car wheels	46.00 to 47.00
Unstripped motor blocks	43.00 to 44.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$51.00 to $52.00
No. 2 hvy. melting	44.00 to 45.00
No. 1 dealer bundles	51.00 to 52.00
No. 2 bundles	42.00 to 43.00
Machine shop turn.	32.00 to 33.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	35.00 to 36.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. & under	54.00 to 55.00
Rails, random lengths	62.00 to 63.00
Rails, 18 in. and under	70.00 to 71.00
No. 1 cupola cast	45.00 to 46.00
Hvy. breakable cast	43.00 to 44.00
Drop broken cast	55.00 to 56.00

San Francisco

No. 1 hvy. melting	$48.00
No. 2 hvy. melting	43.00
No. 1 dealer bundles	47.00
No. 2 bundles	35.00
Machine shop turn.	32.00
Cast iron borings	32.00
No. 1 RR. hvy. melting	48.00
No. 1 cupola cast	53.00

Los Angeles

No. 1 hvy. melting	$46.00
No. 2 hvy. melting	43.00
No. 1 dealer bundles	45.00
No. 2 bundles	38.00
Machine shop turn.	32.00
Shoveling turnings	34.00
Cast iron borings	31.00
Elec. furn. 1 ft and under (foundry)	57.00
No. 1 RR. hvy. melting	46.00
No. 1 cupola cast	$52.00 to 53.00

Seattle

No. 1 hvy. melting	$46.00
No. 2 hvy. melting	42.00
No. 2 bundles	$28.00 to 30.00
No. 1 cupola cast	47.00
Mixed yard cast	47.00

Hamilton, Ont.

No. 1 hvy. melting	$45.00
No. 2 hvy. melting	40.00
No. 1 dealer bundles	45.00
No. 2 bundles	34.00
Mixed steel scrap	42.00
Busheling	36.00
Bush., new fact., prep'd	45.00
Bush., new fact., unprep'd	39.00
Machine shop turn.	22.00
Short steel turn.	30.00
Mixed bor. and turn.	24.00
Rails, rerolling	56.00
Cast scrap	52.00

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Cutbacks Strengthen Zinc, Lead Markets

Trade says crisis isn't over yet, but zinc and lead markets have strengthened.

Cutbacks by a major producer have made price more realistic.

But normal summer slowdowns make market sensitive to another price drop.

▪ Both zinc and lead markets look a lot stronger than at the same time last week. And for a change government activity is playing a minor role.

The major factors are (1) price considered more realistic, and (2) announcements of cutbacks in production by American Smelting and Refining Co.

Demand for lead at 13.80¢ per lb., St. Louis; and zinc at 10.50¢ per lb., E. St. Louis, has picked up. Indications are that several consumers who had been staying out of the market in hope of further declines have come in for more substantial tonnages. Feeling in the trade is that while this is definitely not the end of the crisis, the sharp downturn has been spent. July is traditionally the slowest month for both lead and zinc sales. For this reason prices are vulnerable to further declines. But the outlook is for a market no softer than is common at this time of the year.

Cutback Output — American Smelting & Refining, a major producer, added weight to the market with a double cutback announcement: (1) Mine output of zinc will be cut back 3000 tons per month, and (2) smelter production will be cut 2700 tons per month.

The initial move scheduled three mines and a mill for mothballs. The Northport Mine, Colville, Wash.; Keystone Mine, Crested Butte, Colo.; and Ground Hog Mine, Vanadium, N. M. will be closed. Operations at the mill at Deming, N. M., which processes Ground Hog and custom ores, will be suspended.

Less than a week later AS&R reported that production of special high grade zinc at Corpus Christi, Tex., will be reduced by 2700 tons per month.

Down 13 pct — Effect of the American Smelting & Refining cutback is to reduce output of domestic zinc almost 13 pct under first quarter levels. Other, less dramatic, production cutbacks, including the closing of Anaconda's Darwin, Calif., zinc mines and concentrator, should peg zinc output for the second quarter about 10 pct below the initial period in 1957, and the third quarter to 20-25 pct below first quarter production.

Most of the cutbacks in zinc will lend some of their strength to the lead market. The metals occur frequently in the same ore, so a cutback in one means less of the other. The AS&R zinc cutbacks will take 500 tons of lead per month off the market.

Less Lead—In addition, a strike at an AS&R refinery at Monterrey, Mexico, has been in effect about a month and has cost 13,000 tons of refined lead.

Industry is making more serious and drastic attempts to balance the market as hope of government help in 1957 begins to wane. General Services Administration buying is expected to be at levels too low to make much difference.

The new barter regulations have the program tied up in knots, at least for the present. And, at the last counting there were over a dozen bills before the House Ways and Means Committee suggesting action to help the domestic lead and zinc industry. They include various degrees of tariffs and duties, production bonuses, and quotas. Feeling in the industry is that by the time Congress makes up its mind which is best, the session will be about over.

Tungsten

It looks like world traders have just about written off the possibility of U. S. government support of the market. The price for Wolfram ore,

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in June based on quotations appearing in THE IRON AGE, were as follows.

Electrolytic copper, del'd Conn. Valley	30.90
Copper, Lake	30.90
Straits Tin, New York	98.06
Zinc, E. St. Louis	10.84
Lead, St. Louis	14.12
Aluminum ingot, frt allow'd	27.10

Note: Quotations are going prices.

Primary Prices

cents per lb	Current price	last price	date of change
Aluminum ingot	27.10	25.90	8 10 56
Aluminum pig	25.00	24.00	8 10 56
Copper (E)	29.25	32.00	6 19 57
Copper (CS)	29.00	30.00	6 19 57
Copper (L)	29.25	32.00	6 19 57
Lead, St. L.	13.80	14.80	6 11 57
Lead, N. Y.	14.00	15.50	6 11 57
Magnesium ingot	36.00	34.09	8 13 56
Magnesium pig	35.25	33.75	8 13 56
Nickel	74.00	64.50	12 6 56
Titanium sponge	200-250	250-275	6 6 57
Zinc, E. St. L.	10.50	11.00	6 19 57
Zinc, N. Y.	11.00	11.50	6 19 57

ALUMINUM: 99% ingot frt allwd. **COPPER**: (E) = electrolytic, (CS) = custom smelters, electrolytic, (L) = lake. **LEAD**: common grade. **MAGNESIUM**: 99.8% pig, Velasco, Tex. **NICKEL**: Port Colbourne, Canada. **ZINC**: prime western. **TIN**: see above; other primary prices, pg. 128.

from which tungsten is refined, has dropped to $16 per short ton unit. This is 50 pct under the going price about 18 months ago, and well below the government subsidy price of $55.

The steep decline of prices has put consumers in a cautious mood. The lower price is not spurring any jump in demand, and the outlook is for even lower prices before the market settles down.

Aluminum

Operating under the shadow of the primary increase coming the beginning of August, the secondary market made the strongest showing of the year. Increased export demand, and the fact that less scrap is being generated, combined to push both ingot makers scrap and secondary ingot up about ½¢ per lb.

The general feeling in the trade is that the secondary market will hold this level until primary metal moves in August. However, ingot makers urge caution.

Tin

New York traders call the U. S. market "pretty steady for this time of the year." This means that the normal summer lull, and the unsureness of the current market has caused a definite drop in the tonnage traded. Talk is that August will be a good month for industry. But because of the high cost of tin over most other metals, few companies maintain inventories. Any spurt in industrial activity in August will not be reflected in tin sales until the week before.

One N. Y. trader says he is pretty sure that the International Tin Agreement buffer stock now boasts at least "a couple of thousand tons of metal." He believes this buying has been a major factor in the general steadiness of the market in the last few weeks.

Tin prices for the week: June 26—97.25; June 27—97.25; June 28—97.375; July 1—97.375.*

* Estimate.

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"PHOSPHOR BRONZE."® Phosphor Bronze ®

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A little more than seventy-five years ago a wonderful new kind of copper and tin alloy possessing high tensile strength, great resiliency and unusual corrosion-resistant properties was introduced to American industry. This new bronze alloy had been perfected by the addition of a small amount of phosphorus to the copper and tin mixture.

No other producer of metals in the United States was able to duplicate this extraordinarily useful alloy. Therefore, because of the uniqueness of this new phosphorus-bearing alloy, the smelters responsible for its creation gave it a trade name "PHOSPHOR BRONZE" and adopted for itself the firm name of The Phosphor Bronze Smelting Company.

This was the first Phosphor Bronze ever produced in the United States of America.

"Phosphor Bronze" was immediately accepted by America's burgeoning industry. Demand for the new alloy grew by leaps and bounds and The Phosphor Bronze Smelting Company soon had many imitations of its products. So, to protect customers from spurious imitations, the trade name of "Phosphor Bronze" was incorporated into two distinctive *trade-marks* which were duly registered in the U. S. Patent Office on February 21, 1888. These trade-mark registrations have been maintained, in full force, throughout the intervening years and are presently owned by The Seymour Manufacturing Company.

In time, new variations of the original "Phosphor Bronze" alloy were introduced by the now-famous smelting Company. To identify these, the trade name of "ELEPHANT BRAND" was adopted, together with a distinctive picture of an elephant. The words "ELEPHANT BRAND" were incorporated into a *trade-mark* and registered with the U. S. Patent Office on August 20, 1907. The picture of the elephant shown in this advertisement, is a new one, designed to supersede its 1906 predecessor and was Registered, as a *trade-mark*, on October 2, 1956.

We are proud that American industry has wholeheartedly accepted our product. The name "PHOSPHOR BRONZE" has become internationally known and is familiar to metalworking men and metallurgists everywhere.

We—the officers, stockholders and employees of The Seymour Manufacturing Company endorse the action of The Phosphor Bronze Corporation in bequeathing this name to the American metalworking industries. We reserve only . . . the exclusive right to use the trade-marks illustrated above.

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Successors to The Phosphor Bronze Corporation

SEYMOUR, CONNECTICUT

NONFERROUS PRICES *(Effective June 30, 1957)*

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-.3
1800, 1100, 3003	44.3	42.1	40.9	40.2
5052	51.8	46.8	45.1	42.9
6061-0	48.9	44.6	42.8	42.6

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.4	57.6-61.1
12-14	43.4-44.8	58.4-62.7
24-26	46.4-46.9	68.7-78.1
36-38	54.8-55.4	91.5-94.9

Screw Machine Stock—2011-T-3

Size*	¼	⅜-⅝	¾-1	1¼-1½
Price	59.7	58.8	57.4	55.2

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.010 gage	$1.352	$1.803	$2.254	$2.704
.024 gage	1.686	2.252	2.815	3.378

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type Gage→	.250-3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade		67.9	69.0	77.9	108.1
AZ31B Spec.		93.3	95.7	108.7	171.3
Tread Plate		70.6	71.7		
Tooling Plate	73.0				

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included on 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	51.38		48.61	51.57
Brass, 70/30	44.69	45.23	46.63	47.60
Brass, Low	47.40	47.94	47.34	50.21
Brass, R.L.	48.36	48.90	48.30	51.17
Brass, Naval	48.85		43.16	52.26
Muntz Metal	46.94		42.75	
Comm. Bz.	49.86	50.40	49.80	52.42
Mang. Bz.	52.29		46.69	
Phos. Bz. 5%	70.47		70.97	

Free Cutting Brass Rod 32.87

TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, $9.50-$10.60; alloy, $14.75; Plate, HR, commercially pure, $8.00-$8.75; alloy, $10.75. Wire, rolled and/or drawn, commercially pure, $7.50-$8.00; alloy, $10.00; Bar, HR or forged, commercially pure, $6.15-6.40; alloy, $6.15-$6.35; billets, HR, commercially pure, $6.00-$6.25; alloy, $6.00-$6.20.

PRIMARY METAL

(Cents per lb, unless otherwise noted)

Antimony, American, Laredo, Tex... 33.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.70
Calcium, 99.9%, small lots ..... $ 4.55
Chromium, 99.8% metallic basis ... $ 1.31
Cobalt, 97-99% (per lb) .... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined 39.50-53.50
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9% dollars per troy oz... $ 2.25
Iridium, dollars per troy oz.... $90 to $100
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $255 to $257
Nickel oxide sinter at Copper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz... $23 to $24
Platinum, dollars per troy oz.... $92 to $95
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 90.250
Thorium, per kg. $43.00
Uranium, normal per kg. $40.00
Vanadium ..... $ 3.45
Zirconium sponge $10.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 29.50
No. 120 ..... 28.50
No. 123 ..... 27.00
80-10-10 ingot
No. 305 ..... 33.50
No. 315 ..... 31.50
88-10-2 ingot
No. 210 ..... 41.25
No. 215 ..... 37.50
No. 245 ..... 33.50
Yellow ingot
No. 405 ..... 24.00
Manganese bronze
No. 421 ..... 27.00

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.75-25.00
0.60 copper max. 24.50-24.75
Piston alloys (No. 122 type) ... 22.75-24.75
No. 12 alum. (No. 2 grade) ... 21.25-22.00
108 alloy 21.75-22.50
195 alloy 24.25-25.25
13 alloy (0.60 copper max.) ... 24.50-24.75
AXS-679 ..... 21.75-22.50

Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97½% 23.00-23.50
Grade 2—92-95% 21.25-22.00
Grade 3—90-92% 20.25-21.00
Grade 4—85-90% 19.00-19.75

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	25¼	24½
Yellow brass	19⅜	17⅝
Red brass	22¼	21½
Comm. bronze	23⅜	22⅝
Mang. bronze	17⅝	16⅞
Yellow brass rod ends	18⅞	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 24¾
No. 2 copper wire 23¼
Light copper 20¾
*Refinery brass 20½
Copper bearing material ... 19½
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 24¾
No. 2 copper wire 23¼
Light copper 20¾
No. 1 composition 20½
No. 1 comp. turnings 19½
Hvy. yellow brass solids ... 16½
Brass pipe 18½
Radiators 17½

Aluminum

Mixed old cast ..... 14 —14½
Mixed new clips ..... 15½—16½
Mixed turnings, dry ..... 14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 21 —21½
No. 2 copper wire ..... 19½—20
Light copper ..... 17¾—18¼
Auto radiators (unsweated) ... 13½—14
No. 1 composition ..... 18½—19
No. 1 composition turnings. 18 —18½
Cocks and faucets ..... 14½—15
Clean heavy yellow brass .. 12½—13
Brass pipe ..... 15½—16
New soft brass clippings .... 17 —17½
No. 1 brass rod turnings .... 14¼—14¾

Aluminum

Alum. pistons and struts .... 5½— 6
Aluminum crankcases ..... 10½—11
1100 (2S) aluminum clippings 13½—14
Old sheet and utensils ..... 10½—11
Borings and turnings ..... 6½— 7
Industrial castings ..... 10½—11
2024 (24S) Clippings ..... 12 —12½

Zinc

New zinc clippings ..... 4 — 4½
Old zinc ..... 3 — 3¼
Zinc routings ..... 1¾ — 2
Old die cast scrap ..... 1½— 1¾

Nickel and Monel

Pure nickel clippings 85-90
Clean nickel turnings 70-75
Nickel anodes 85-90
Nickel rod ends 85-90
New Monel clippings 45-48
Clean Monel turnings 35-40
Old sheet Monel 44-45
Nickel silver clippings, mixed 21
Nickel silver turnings, mixed 18

Lead

Soft scrap lead ..... 9½—10
Battery plates (dry) ..... 4¼— 4½
Batteries, acid free ..... 2¾— 3

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixed common babbitt ..... 11 —11½
Solder joints ..... 15½—16
Siphon tops 42
Small foundry type ..... 13 —13¼
Monotype ..... 13 —13¼
Lino. and stereotype ..... 12 —12¼
Electrotype ..... 11 —11¼
Hand picked type shells ..... 8 — 8½
Lino. and stereo. dross ..... 3¾— 4
Electro. dross ..... 3 — 3¼

THE ONE BIG NAME

IN STAINLESS SCRAP

Stainless Steel, Straight Chrome, Pure Nickel, Nickel Chrome Alloys, Jet Alloys, Monel, Inconel

H. KLAFF & CO., INC.

World's No. 1 Stainless Scrap Specialist
Baltimore 30, Md. . . . LExington 9-6721

COMPARISON OF PRICES

(Effective June 30, 1957)

Finished steel prices on this and following pages do not reflect increases effective July 1 as announced by U. S. Steel Corp. and other producers. For details please see page 121.

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	June 30 1957	June 25 1957	June 4 1957	July 2 1956
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.675¢	4.675¢	4.675¢	4.325¢
Cold-rolled sheets	5.75	5.75	5.75	5.325
Galvanized sheets (10 ga.)	6.30	6.30	6.30	5.85
Hot-rolled strip	4.675	4.675	4.675	4.325
Cold-rolled strip	6.870	6.870	6.870	6.28
Plate	4.87	4.87	4.87	4.52
Plates, wrought iron	10.40	10.40	10.40	10.40
Stainl's C-R strip (No. 302)	50.00	50.00	50.00	44.50
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$9.85
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	8.55
Special coated mfg. ternes	9.55	9.55	9.55	9.10
Bars and Shapes: (per pound)				
Merchant bars	5.075¢	5.075¢	5.075¢	4.65¢
Cold finished bars	6.85	6.85	6.85	5.90
Alloy bars	6.125	6.125	6.125	5.65
Structural shapes	5.00	5.00	5.00	4.60
Stainless bars (No. 302)	43.25	43.25	43.25	38.25
Wrought iron bars	11.50	11.50	11.50	11.50
Wire: (per pound)				
Bright wire	7.20¢	7.20¢	7.20¢	6.60¢
Rails: (per 100 lb.)				
Heavy rails	$5.275	$5.275	$5.275	$4.725
Light rails	6.25	6.25	6.25	5.65
Semifinished Steel: (per net ton)				
Rerolling billets	$74.00	$74.00	$74.00	$68.50
Slabs, rerolling	74.00	74.00	74.00	68.50
Forging, billets	91.50	91.50	91.50	84.50
Alloy blooms, billets, slabs	107.00	107.00	107.00	96.00
Wire Rod and Skelp: (per pound)				
Wire rods	5.80¢	5.80¢	5.80¢	5.025¢
Skelp	4.625	4.625	4.625	4.225
Finished Steel Composite: (per pound)				
Base price	5.670¢	5.670¢	5.670¢	5.179¢

	June 30 1957	June 25 1957	June 4 1957	July 2 1956
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$68.88	$68.88	$68.88	$65.26
Foundry, Valley	65.00	65.00	65.00	60.50
Foundry, Southern Cin'ti	67.17	67.17	67.17	62.93
Foundry, Birmingham	59.00	59.00	59.00	56.33
Foundry, Chicago	65.00	65.00	65.00	60.50
Basic, del'd Philadelphia	68.38	68.38	68.38	64.48
Basic, Valley furnace	64.50	64.50	64.50	60.00
Malleable, Chicago	65.00	65.00	65.00	60.50
Malleable, Valley	65.00	65.00	65.00	60.50
Ferromanganese, cents per lb‡ 74 to 76 pct Mn base.	12.75¢	12.75¢	12.75¢	9.50¢
Pig Iron Composite: (per gross ton)				
Pig iron	$64.56	$64.56	$64.56	$57.17
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$56.50	$56.50	$50.50	$44.50
No. 1 steel, Phila. area	55.50	56.50	55.50	46.50
No. 1 steel, Chicago	51.50	51.50	46.50	43.50
No. 1 bundles, Detroit	47.50	46.50	43.50	37.50
Low phos., Youngstown	56.50	56.50	54.50	46.50
No. 1 mach'y cast, Pittsburgh	57.50	57.50	56.50	54.50
No. 1 mach'y cast, Philadel'a	56.50	56.50	56.50	54.50
No. 1 mach'y cast, Chicago	50.50	51.50	49.50	47.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	$54.50	$54.83	$50.83	$44.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.38	$15.38	$15.38	$14.50
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-$19	$17.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.25	29.25	32.00	46.00
Copper, Lake, Conn.	29.25	29.25	32.00	46.00
Tin, Straits, New York	97.375†	97.50*	98.375	94.75
Zinc, East St. Louis	10.50	10.50	11.50	13.50
Lead, St. Louis	13.80	13.80	14.80	15.80
Aluminum, virgin ingot	27.10	27.10	27.10	25.90
Nickel, electrolytic	74.00	74.00	74.00	64.50
Magnesium, ingot	36.00	36.00	36.00	34.50
Antimony, Laredo, Tex.	33.00	33.00	33.00	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

←To identify producers, see Key on P. 134→

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	66.50	67.00	67.50	68.00	.....
Birmingham *R3*	58.50	59.00*	.....	.....	.....
Birmingham *W9*	58.50	59.00*	63.00	.....	.....
Birmingham *U4*	58.50	59.00*	63.00	.....	.....
Buffalo *R3*	64.50	65.00	65.50	66.00	.....
Buffalo *H1*	64.50	65.00	65.50	66.00	.....
Buffalo *W6*	64.50	65.00	65.50	66.00	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	64.50	65.00	65.00	65.50	.....
Cleveland *A5*	64.50	65.00	65.00	65.50	69.50†
Cleveland *R3*	64.50	65.00	65.00	65.50	.....
Duluth *I6*	64.50	65.00	65.00	65.50	69.50†
Erie *I4*	64.50	65.00	65.00	65.50	69.50†
Everett *M6*	66.50	67.00	67.50	.....	.....
Fontana *K1*	72.50	73.00	.....	.....	.....
Geneva, Utah *C7*	64.50	65.00	.....	.....	.....
Granite City *G2*	66.40	66.90	67.40	.....	.....
Hubbard *Y1*	.....	.....	65.00	.....	.....
Ironton, Utah *C7*	64.50	65.00	.....	.....	.....
Midland *C11*	64.50	.....	.....	.....	.....
Minnequa *C6*	66.50	67.00	67.50	68.00	.....
Monessen *P6*	64.50	.....	.....	.....	.....
Neville Is. *P4*	64.50	65.00	65.00	65.50	69.50†
N. Tonawanda *T1*	.....	65.00	65.50	66.00	.....
Sharpsville *S3*	64.50	65.00	65.00	65.50	.....
So. Chicago *R3*	64.50	65.00	65.00	.....	.....
Swedeland *A2*	66.50	67.00	67.50	68.00	.....
Toledo *I4*	64.50	65.00	65.00	65.50	.....
Troy, N. Y. *R3*	66.50	67.00	67.50	68.00	72.50
Youngstown *Y1*	.....	.....	65.00	65.50	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. * Add $1.00 for 0.31-0.69 pct phos. † Intermediate low phos. ‡ Add $1.00 for 0.31 to 0.50 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $78.50; Jackson, *J1, I4* (Globe Div.), $77.25; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add ‡$1.00 premium for all grades silvery 6 pct to 14 pct.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	21.25	22.75	22.25	24.25	—	26.00	38.25	31.00	35.50	—	16.00	27.75	16.25
Slabs, billets	26.00	29.00	27.00	30.25	30.75	32.00	47.50	38.50	44.75	—	20.75	—	21.00
Billets, forging	—	35.00	35.75	36.50	39.50	39.00	59.75	45.25	53.50	30.75	27.25	27.75	27.75
Bars, struct.	40.50	41.25	42.50	43.25	46.25	46.00	70.25	53.25	62.25	36.25	32.50	33.00	33.00
Plates	42.50	43.25	44.50	45.50	48.00	48.75	73.75	57.50	67.00	38.75	33.75	35.50	34.50
Sheets	46.75	47.25	49.25	50.00	—	53.25	78.25	63.00	76.25	46.50	38.75	46.50	39.25
Strip, hot-rolled	34.50	37.50	35.75	39.00	—	42.50	66.50	51.50	61.00	—	29.75	—	30.75
Strip, cold-rolled	43.25	47.25	45.75	50.00	—	53.25	78.25	63.00	76.25	46.50	38.75	46.50	39.25
Wire CF; Rod HR	—	39.25	40.25-40.50	41.00-41.25	44.00	43.75	66.75-67.00	50.50-51.00	59.25-59.50	34.50	31.00	31.50	31.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *C5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1;* New Bedford, Mass. (.25¢ per lb higher), *R6;* Gary *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A3;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Philadelphia, *D3;* Detroit, *R5;* Gary, *U1.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Philadelphia, *D5;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forgings billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R4;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1.*

IRON AGE

STEEL PRICES

(Effective June 30, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$107.00 *B3*		5.05 *B3*	7.40 *B3*	5.05 *B3*						
	Buffalo, N. Y.	$74.00 *B3, R3*	$91.50 *B3, R3*	$107.00 *B3, R3*	5.90 *B3*	5.05 *B3*	7.40 *B3*	5.05 *B3*	4.675 *B3 R3*	6.85 *R7*	6.95 *B3*			
	Claymont, Del.													
	Harrison, N. J.													14.55 *C11*
	Conshohocken, Pa.		$96.50 *A2*	$114.00 *A2*					4.725 *A2*	6.90 *A2*	6.95 *A2*			
	New Bedford, Mass.									7.30 *R6*				
	Johnstown, Pa.	$74.00 *B3*	$91.50 *B3*	$107.00 *B3*		5.05 *B3*	7.40 *B3*							
	Boston, Mass.									7.40 *T8*				14.90 *T8*
	New Haven, Conn.									7.30 *D1*				
	Baltimore, Md.									6.85 *T8*				
	Phoenixville, Pa.					5.85 *P2*		5.85 *P2*						
	Sparrows Pt., Md.								4.675 *B3*		6.95 *B3*			
	Bridgeport, Wallingford, Conn.	$79.00 *N8*	$96.50 *N8*	$107.00 *N8*						7.30 *W1* 6.95 *N8*				
	Pawtucket, R. I. Worcester, Mass.									7.48 *A5, N7*				14.90 *N7*
MIDDLE WEST	Alton, Ill.								4.875 *L1*					
	Ashland, Ky.								4.675 *A7*					
	Canton-Massillon, Dover, Ohio		$94.00 *R3*	$107.00 *R3, T5*						6.85 *G4*		10.10 *G4*		14.55 *G4*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$74.00 *U1, R3*	$91.50 *U1, R3,W8*	$107.00 *U1, R3,W8*	5.90 *U1*	5.00 *U1,W8* 5.00 *P13*	7.35 *U1,Y1* 6.00 *W8*	5.00 *U1*	4.675 *N4* 4.675 *A1*	6.95 *A1, T8* 6.95 *M8*			7.75 *W8, S9*	14.55 *A1, S9, T8*
	Cleveland, Ohio									6.85 *A5, J3*			7.75 *J3*	
	Detroit, Mich.			$107.00 *R3*					4.775 *G3, M2*	6.95 *M2 G3, D2, P11*	7.05 *G3*	10.10 *G3, D2*	7.75 *G3*	
	Anderson, Ind.									6.85 *G4*		10.10 *G4*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$74.00 *U1*	$91.50 *U1*	$107.00 *U1, Y1*	5.90 *I3*	5.00 *U1*	7.35 *U1, I3*	5.25 *I3*	4.675 *U1, I3,Y1*	6.85 *Y1*	6.95 *U1, I3,Y1*	10.20 *Y1*	7.75 *U1, Y1*	
	Sterling, Ill.	$74.00 *N4*				5.00 *N4*			4.775 *N4*					
	Indianapolis, Ind.									7.00 *C5*				
	Newport, Ky.												7.75 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		$91.50 *S1, C10*	$107.00 *S1, C10*					4.675 *S1, R3*	6.85 *T4*	6.95 *S1, R3*	10.00 *S1, R3*	7.75 *S1*	14.55 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$74.00 *U1*	$91.50 *U1, C11*	$107.00 *U1, C11*	5.90 *U1*	5.00 *U1, J3*	7.35 *U1, J3*	5.00 *U1*	4.675 *P6*	5.750 *P6* 6.85 *J3,B4, S7*			7.75 *S9*	14.55 *S9*
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.					5.00 *W3*			4.675 *W3*	6.85 *W3,F3*	6.95 *W3*	9.65 *W3*		
	Youngstown, Ohio	$74.00 *R3*	$91.50 *Y1, C10*	$107.00 *Y1*			7.35 *Y1*			6.85 *Y1,C5*	6.95 *U1, Y1*	10.20 *Y1*	7.75 *U1, Y1*	
WEST	Fontana, Cal.	$83.50 *K1*	$101.00 *K1*	$128.00 *K1*		5.75 *K1*	8.10 *K1*	5.90 *K1*	5.525 *K1*	8.70 *K1*				
	Geneva, Utah		$91.50 *C7*			5.00 *C7*	7.35 *C7*							
	Kansas City, Mo.					5.10 *S2*	7.45 *S2*		4.925 *S2*		7.20 *S2*			
	Los Angeles, Torrance, Cal.		$101.00 *B2*	$127.00 *B2*		5.70 *C7, B2*	8.05 *B3*		5.425 *B2, C7*	8.90 *C1*			8.95 *B2*	
	Minnequa, Colo.					5.30 *C6*			5.775 *C6*					
	Portland, Ore.					5.75 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$101.00 *B2*			5.65 *B2*	8.00 *B2*		5.425 *C7, B2*					
	Seattle, Wash.		$105.00 *B2*			5.75 *B2*	8.10 *B2*		5.675 *B2*					
SOUTH	Atlanta, Ga.					5.20 *A8*			4.875 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$74.00 *T2*	$91.50 *T2*			5.00 *T2, R3* 5.00 *C16*	7.35 *T2*		4.675 *T2, R3* 4.975 *C10* 4.675 *C16*		6.95 *T2*			
	Houston, Lone Star, Texas	$80.00 *L3*	$96.50 *S2*	$112.00 *S2*		5.10 *S2*	7.45 *S2*		4.925 *S2*		7.20 *S2*			

IRON AGE

STEEL PRICES

(Effective June 30, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Coke* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.675 *B3*	5.75 *B3*				6.90 *B3*	8.525 *B3*			5.80 *W6*			
	Claymont, Del													
	Coatesville, Pa.													
	Conshohocken, Pa.	4.725 *A2*	5.80 *A2*				6.95 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.										5.80 *B3*			
	Fairless, Pa.	4.725 *U1*	5.80 *U1*				6.95 *U1*	8.575 *U1*				$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.													
	Phoenixville, Pa.													
	Sparrows Pt., Md.	4.675 *B3*	5.75 *B3*	6.30 *B3*			6.90 *B3*	8.575 *B3*	9.275 *B3*		5.90 *B3*	$10.15 *B3*	$5.85 *B3*	
	Worcester, Mass.										6.10 *A5*			
	Trenton, N. J.													
MIDDLE WEST	Alton, Ill.										6.00 *L1*			
	Ashland, Ky.	4.675 *A7*		6.30 *A7*	6.325 *A7*									
	Canton-Massillon, Dover, Ohio			6.30 *R3,R1*										
	Chicago, Joliet, Ill.	4.675 *W8, A1*					6.90 *U1*			5.80 *K2*	5.80 *A5,R3, N4,W8, K2*			
	Sterling, Ill.										5.90 *N4, K2*			
	Cleveland, Ohio	4.675 *J3, R3*	5.75 *J3, R3*		6.325 *R3*		6.90 *R3*	8.525 *R3, J3*			5.80 *A5*			
	Detroit, Mich.	4.775 *G3, M2*	5.85 *G3* 5.75 *M2*				7.00 *G2*	8.625 *G3*						
	Newport, Ky.	4.675 *A9*	5.75 *A9*											
	Gary, Ind. Harbor, Indiana	4.675 *U1, I3,Y1*	5.75 *U1, I3,Y1*	6.30 *U1, I3*	6.325 *U1, I3,Y1*	6.70 *U1*	6.90 *U1, Y1,I3*	8.525 *U1, Y1*			5.80 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1,Y1*	7.50 *U1, Y1*
	Granite City, Ill.	4.875 *G2*	5.95 *G2*	6.50 *G2*	6.525 *G2*								$8.85 *G2*	7.00 *G2*
	Kokomo, Ind.			6.40 *C9*							5.90 *C9*			
	Mansfield, Ohio		5.75 *E2*			6.70 *E2*								
	Middletown, Ohio		5.75 *A7*	6.30 *A7*	6.325 *A7*	6.70 *A7*								
	Niles, Warren, Ohio Sharon, Pa.	4.675 *S1, R3,N3*	5.75 *R3*	6.30 *R3*	6.325 *N3*	6.70 *N3*	6.90 *S1, R3*	8.525 *S1, R3*					$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.675 *U1, J3,P6*	5.75 *U1, J3,P6*	6.30 *U1, J3*	6.325 *U1*		6.90 *U1, J3,R3*	8.525 *U1, J3*	9.275 *U1*		5.80 *A5, P6,J3*	$10.05 *J3, U1*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.675 *P7*	5.75 *P7*								5.30 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.675 *W3, W5*	5.75 *W3, W5,F3*	6.30 *W3, W5*		6.70 *W3, W5*	6.90 *W3*	8.525 *W3*				$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	4.675 *U1, Y1*	5.75 *Y1.*		6.325 *Y1*		6.90 *Y1*	8.525 *Y1*			5.30 *Y1*			
WEST	Fontana, Cal.	5.525 *K1*	7.00 *K1*				7.75 *K1*	9.775 *K1*				$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	4.775 *C7*												
	Kansas City, Mo.										6.05 *S2*			
	Los Angeles, Torrance, Cal.										6.60 *B2*			
	Minnequa, Colo.										6.05 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.375 *C7*	6.70 *C7*	7.05 *C7*							6.60 *C7*	$10.80 *C7*	$9.50 *C7*	
	Seattle, Wash.													
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.675 *T2, R3*	.575 *T2*	6.30 *T2, R3*							5.80 *T2,R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.										6.05 *S2*			

† Special coated mfg. terne deduct 50¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25-lb. coke base box.

* COKES: 1.50-lb. add 25¢.

ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.

IRON AGE

STEEL PRICES

(Effective June 30, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr'o. Bright
EAST	Bethlehem, Pa.				6.125 *B3*	8.325 *B3*	7.40 *B3*					
	Buffalo, N. Y.	5.075 *B3,R3*	5.075 *B3,R3*	6.90 *B5*	6.125 *B3,R3*	8.325 *B5,B3*	7.40 *B3*	4.85 *B3*				7.20 *W6*
	Claymont, Del.							5.70 *C4*		6.85 *C4*	7.55 *C4*	
	Coatesville, Pa.							5.25 *L4*		6.85 *L4*	7.55 *L4*	
	Conshohocken, Pa.							4.95 *A2*	5.925 *A2*	6.85 *A2*	7.25 *A2*	
	Harrisburg, Pa.							5.80 *P2*	6.275 *P2*			
	Hartford, Conn.			7.35 *R3*		8.625 *R3*	7.40 *B3*					
	Johnstown, Pa.	5.075 *B3*	5.075 *B3*		6.125 *B3*			4.85 *B3*		6.85 *B3*	7.25 *B3*	7.20 *B3*
	Fairless, Pa.	5.225 *U1*	5.225 *U1*		6.275 *U1*							
	Newark, N. J.			7.30 *W10*		8.50 *W10*						
	Camden, N. J.			7.30 *P10*		8.50 *P10*						
	Bridgeport, Conn. Putnam, Conn.	5.30 *N8*	5.30 *N8*	7.20 *N8* 7.40 *W10*	6.20 *N8*	8.475 *N8*	7.50 *N8*					
	Sparrows Pt., Md.		5.075 *B3*					4.85 *B3*		6.85 *B3*	6.85 *B3*	7.30 *B3*
	Palmer, Worcester, Readville, Mass. Milton, Mass.	5.225 *M7*	5.225 *M7*	7.40 *B3,C14*		8.625 *A5*						7.50 *A5,W6*
						8.625 *B5*						9.025 *T8*
	Spring City, Pa.			7.30 *K4*		8.50 *K4*						
MIDDLE WEST	Alton, Ill.	5.275 *L1*										7.40 *L1*
	Ashland,Newport,Ky.							4.85 *A7,A9*		6.85 *A9*		
	Canton, Massillon, Ohio			6.85 *R3,R2*	6.125 *R3,T5*	8.325 *R3,R2, T5*						
	Chicago, Joliet, Ill.	5.075 *U1,R3, W8,N4* 5.075 *P13*	5.075 *U1,R3, N4* 5.075 *P13*	6.85 *A5,B5, W10,L2 W8,N9*	6.125 *U1,R3, W8*	8.325 *A5,B5, W8,L2,N9 W10*	5.875 *W8* 7.425 *U1*	4.85 *U1,13, W8,A1*	5.925 *U1*	6.85 *U1,W8*	7.25 *U1*	7.20 *A5,K2, R3,N4,W7*
	Cleveland, Ohio	5.075 *R3*	5.075 *R3*	6.85 *A5,C13*		8.325 *A5,C13*	7.425 *R3*	4.95 *J3,R3*	5.925 *J3*		7.25 *J3,R3*	7.20 *A5, C13*
	Detroit, Mich.	5.175 *G3*	5.425 *G3*	7.05 *B5,P8* 7.10 *P3* 6.85 *R5*	6.225 *G3* 6.125 *R5*	8.525 *B5,P3, P8* 8.325 *R5*	7.525 *G3*	4.95 *G3*		6.90 *G3*		
	Duluth, Minn.											7.20 *A5*
	Gary, Ind. Harbor, Crawfordsville	5.075 *U1,13, Y1*	5.075 *U1,13, Y1*	6.85 *R3,M5*	6.125 *U1,13, Y1*	8.325 *R3,M4*	7.425 *U1,13, Y1*	4.85 *U1,13, Y1*	5.925 *13*	6.85 *U1,Y1*	7.25 *U1,Y1*	7.30 *M4*
	Granite City, Ill.							5.05 *G2*				
	Kokomo, Ind.											7.30 *C9*
	Sterling, Ill.	5.175 *N4*	5.175 *N4*					4.85 *N4*				7.30 *K2*
	Niles, Warren, Ohio Sharon, Pa.			6.85 *C10*	6.125 *C10,S1*	8.325 *C10*	7.425 *S1*	4.85 *S1,R3*		6.85 *S1*	7.25 *S1,R3*	
	Pittsburgh, Pa. Midland, Pa.	5.075 *U1, C11,J3*	5.075 *U1,J3*	6.85 *A5,C8, J3,R3,S9, B4,W10,C11*	6.125 *U1, C11,J3*	8.325 *A5,R3, S9,C8,W10, C11*	7.425 *U1,J3*	4.85 *U1,J3*	5.925 *U1*	6.85 *U1,J3*	7.25 *U1,J3*	7.20 *A5,J3, P6*
	Portsmouth, Ohio											7.20 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							4.85 *W5*				
	Youngstown, Ohio	5.075 *U1, Y1,R3*	5.075 *U1, Y1,R3*	6.85 *U1,Y1, F2*	6.125 *U1,Y1*	8.325 *Y1,F2*	7.425 *U1,Y1*	4.85 *U1,Y1, R3*		6.85 *Y1*	7.25 *Y1* 7.25 *U1*	7.20 *Y1*
WEST	Emeryville, Cal.	5.825 *J5*	5.825 *J5*									
	Fontana, Cal.	5.775 *K1*	5.775 *K1*		7.175 *K1*		8.125 *K1*	5.60 *K1*		7.60 *K1*	8.00 *K1*	
	Geneva, Utah							4.85 *C7*			7.25 *C7*	
	Kansas City, Mo.	5.325 *S2*	5.325 *S2*		6.375 *S2*		7.675 *S2*					7.45 *S2*
	Los Angeles, Torrance, Cal.	5.775 *C7,B2*	5.775 *C7,B2*	8.30 *R3,P14*	7.175 *B2*	10.20 *P14*	8.125 *B2*					8.15 *B2*
	Minnequa, Colo.	5.525 *C6*	5.525 *C6*					5.70 *C6*				7.45 *C6*
	Portland, Ore.	5.825 *O2*	5.825 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	5.775 *C7* 5.825 *B2* 6.025 *P9*	5.775 *C7* 5.825 *B2* 6.025 *P9*				8.175 *B2*					8.15 *C7,C6*
	Seattle, Wash.	5.825 *B2, N6*	5.825 *B2*				8.175 *B2*	5.75 *B2*		7.75 *B2*	8.15 *B2*	
SOUTH	Atlanta, Ga.	5.275 *A8*	5.275 *A8*									7.40 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.075 *T2,R3* 5.075 *C16*	5.075 *T2,R3* 5.075 *C16*	7.45 *C16*			7.425 *T2*	4.85 *T2,R3*			7.25 *T2*	7.20 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.325 *S2*	5.325 *S2*		6.375 *S2*		7.675 *S2*	4.95 *S2* 5.20 *L3*		6.95 *S2*	7.35 *S2*	7.45 *S2*

†Merchant Quality—Special Quality .35¢ higher.

STEEL PRICES *(Effective June 30, 1957)*

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metals Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Div., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Northeastern Steel Corp., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	7.25	+8.00	10.25	+4.00	13.75	0.50	16.25	1.25	16.75	2.25	17.25	2.75	18.75	2.50								
Youngstown *R3*	9.25	+10.00	12.25	+6.00	15.75	+1.50	18.25	0.25	18.75	1.25	19.25	1.75	20.75	2.50								
Fontana *K1*	+3.75	+19.00	+0.75	+15.00	2.75	+10.50	5.25	+9.75	5.75	+8.75	6.25	+8.25	7.75	+8.50								
Pittsburgh *J3*	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	4.50	5.25	+20.25	1.25	+15.50	3.75	+13.00	5.25	+11.50
Alton, Ill. *L1*	7.25	+8.00	10.25	+4.00	13.75	0.50	16.25	1.25	16.75	2.25	17.25	2.75	18.75	2.50								
Sharon *M3*	9.25	+10.00	12.25	+2.00	15.75	+1.50	18.25	0.25	18.75	1.25	19.25	1.75	20.75	2.50								
Fairless *N2*	7.25	+8.00	10.25	+4.00	13.75	0.50	16.25	1.25	16.75	2.25	17.25	2.75	18.75	2.50								
Pittsburgh *N1*	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	4.50	5.25	+20.25	1.25	+15.50	3.75	+13.00	5.25	+11.50
Wheeling *W5*	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	4.50								
Wheatland *W4*	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	4.50								
Youngstown *Y1*	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	4.50	5.25	+20.25	1.25	+15.50	3.75	+13.00	5.25	+11.50
Indiana Harbor *Y1*	8.25	+9.00	13.25	+2.00	14.75	1.50	17.25	2.25	17.75	3.25	18.25	3.75	19.75	4.25								
Lorain *N2*	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	4.50	5.25	+20.25	1.25	+15.50	3.75	+13.00	5.25	+11.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	11.75	+2.00	15.75	2.00	18.75	6.50	19.25	5.25	19.75	6.25	20.25	6.75	20.75	5.50								
Youngstown *R3*	13.75	list	17.75	list	20.75	4.50	21.25	4.25	21.75	5.25	22.25	5.75	22.75	5.50								
Fairless *N2*	11.75	+2.00	15.75	2.00	18.75	6.50	19.25	5.25	19.75	6.25	20.25	6.75	20.75	5.50								
Fontana *K1*	0.75	+13.00	4.75	+9.00	7.75	+4.50	8.25	+5.75	8.75	+4.75	9.25	+4.25	9.75	+5.50								
Pittsburgh *J3*	13.75	list	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+9.50	11.25	+4.50
Alton, Ill. *L1*	11.75	+2.00	15.75	2.00	18.75	6.50	19.25	5.25	19.75	6.25	20.25	6.75	20.75	5.50								
Sharon *M3*	13.75	+2.00	17.75	list	20.75	4.50	21.25	4.25	21.75	5.25	22.25	5.75	22.75	5.50								
Pittsburgh *N1*	13.75	list	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+9.50	11.25	+4.50
Wheeling *W5*	13.75	list	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50								
Wheatland *W4*	13.75	list	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50								
Youngstown *Y1*	13.75	list	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+9.50	11.25	+4.50
Indiana Harbor *Y1*	12.75	+1.00	16.75	3.00	19.75	7.50	20.25	6.25	20.75	7.25	21.25	7.75	21.75	6.50								
Lorain *N2*	13.75	list	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+9.50	11.25	+4.50

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11¢ per lb.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.68	T-1
18	4	1	—	5	2.385	T-4
18	4	2	—	—	1.185	T-2
1.5	4	1.5	8	—	1.04	M-1
6	4	3	6	—	1.43	M-3
6	4	2	5	—	1.185	M-2

High-carbon chromium	.83	D-3, D-5
Oil hardened manganese	.45	O-2
Special carbon	.41	W-1
Extra carbon	.345	W-1
Regular carbon	.29	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*A3, J2, L4*) 10 pct	Plate (*A3, J2, L4*) 15 pct	Plate (*A3, J2, L4*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				35.50
	304	36.20	40.30	44.50	37.75
	316	41.60	45.90	50.15	55.50
	321	37.95	42.10	46.40	44.75
	347	41.25	46.45	51.70	54.25
	405	29.20	33.15	37.05	
	410, 430	28.70	32.65	36.55	

CR Strip (S9) Copper, 10 pct, 2 sides, 39.85; 1 side, 33.00.

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	9.00	9.20	
Armature	10.35	10.35	10.85
Elect.	11.00	11.025	11.525
Meter	12.05	12.075	12.575
Dynamo	13.05	13.05	13.55
Trans. 72	14.05	14.05	14.55
Trans. 65	14.60		
		Grain Oriented	
Trans. 58	15.10	Trans. 80	18.50
Trans. 52	16.15	Trans. 73	19.00

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*N5*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*) (20¢ higher, HR); Zanesville, Butler (*A7*).

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1957 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	167	181		195	187	8.10	8.50
Aliquippa, Pa. *J3****	164	179			181	8.20	8.875
Atlanta *A2***	166	182		192	190	8.05	8.65
Bartonville *K2***	166	182		198	190	8.30	9.06
Buffalo *W6*						8.20	8.75
Chicago, Ill. *N4***	164	180	167	196	188	8.35	9.10
Cleveland *A6*	173					8.20	8.75
Cleveland *A5*						8.20	
Crawfordsville *M4****	166	182		198	190	8.30	9.05
Donora, Pa. *A5*	164	176		196	184	8.20	8.75
Duluth *A5*	164	176	167	196	184	8.20	8.75
Fairfield, Ala. *T2*	164	176		196	184	8.20	8.75
Galveston *D4*‡	169						
Houston *S2*	169	181		195	189	8.45	9.00
Johnstown, Pa. *B3***	164	180	167		188	8.20	8.90
Joliet, Ill. *A5*	164	176		196	184	8.20	8.75
Kokomo, Ind. *C9**	166	178		198	186	8.30	8.85
Los Angeles *B2***						9.15	9.90
Kansas City *S2**	169	181		195	189	8.45	9.00
Minnequa *C6*†	169	181	172	201	189	8.45	9.00
Monessen *P6*	167	185			191	8.10	8.10
Palmer, Mass. *W6*						8.50	9.05
Pittsburg, Cal. *C7*	183	199		220	204	9.15	9.70
Rankin, Pa. *A5*	164	176			184	8.20	8.75
So. Chicago *R3*	167	181		195	187	8.10	8.50
S. San Francisco *C6*†				220		9.15	9.70
Sparrows Pt. *B5***	166			198	190	8.30	9.00
Struthers, O. *Y1**						8.20	8.85
Worcester *A5*	170					8.50	9.05
Williamsport, Pa. *S5*			175				

* Zinc less than .10¢ † Plus zinc extras.
** 11-12¢ zinc. ‡ Wholesalers only.
*** .10¢ zinc.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.20	10.40	12.60	15.60	18.55
Bristol, Conn. *W12*		10.40	12.60	15.60	18.55
Boston *T8*	9.20	10.40	12.60	15.60	18.55
Buffalo, N. Y. *R7*	8.65	10.10	12.30	15.30	18.25
Carnegie, Pa. *S9*	8.65	10.10	12.30	15.30	
Cleveland *A5*	8.65	10.10	12.30	15.30	18.25
Detroit *D1*	8.75	10.20	12.40	15.40	
Detroit *D2*	8.75	10.20	12.40		
Dover, O. *G4*	8.65	10.10	12.30	15.30	18.25
Evanston, Ill. *M8*	8.65	10.10	12.30		
Franklin Park, Ill. *T8*	8.75	10.10	12.30	15.30	18.25
Harrison, N. J. *C11*			12.60	15.60	18.55
Indianapolis *C5*	8.80	10.25	12.30	15.30	18.25
Los Angeles	10.85	12.30	14.50		
New Castle, Pa. *B4*	8.65	10.10	12.30	15.30	
New Haven, Conn. *D1*	9.10	10.40	12.60	15.60	
Pawtucket, R. I. *N7*	9.20	10.40	12.60	15.60	18.55
Pittsburgh *S7*	8.65	10.10	12.30	15.30	18.25
Riverdale, Ill. *A1*	8.75	10.10	12.30	15.30	18.25
Sharon, Pa. *S1*	8.65	10.10	12.30	15.30	18.25
Trenton *R4*	11.05	10.40	12.60	15.60	18.55
Wallingford *W1*	9.10	10.40	12.60	15.60	18.45
Warren, Ohio *T4*	8.65	10.10	12.30	15.30	18.25
Worcester, Mass. *A5*	9.20	10.40	12.60	15.60	18.55
Youngstown *C5*	8.65	10.10	12.30	15.30	18.25

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	36.34	42.56	33.21	
	2½	12	48.94	57.31	44.73	
	3	12	56.51	66.18	51.66	
	3½	11	65.97	77.25	60.30	
	4	10	87.61	102.59	80.07	
National Tube	2	13	36.34	42.56	33.21	
	2½	12	48.94	57.31	44.73	
	3	12	56.51	66.18	51.66	
	3½	11	65.97	77.25	60.30	
	4	10	87.61	102.59	80.07	
Pittsburgh Steel	2	13	36.34	42.56		
	2½	12	48.94	57.31		
	3	12	56.51	66.18		
	3½	11	65.97	77.25		
	4	10	87.61	102.59		

WAREHOUSES

Metropolitan Price, dollars per 100 lb

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Hot-Rolled (special quality)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.17	9.37	9.83	8.21	8.55	8.59	8.45		10.23				
Baltimore	$.10	7.98	9.08	9.31	8.46	8.36	8.85	8.53		9.13	14.99	14.44	18.39	18.09
Birmingham	.15	7.80	9.00	9.52	7.82	8.16	8.20	8.07	8.44	10.04-10.12				
Boston	.10	8.94	9.98	11.06	8.99	9.28	9.20	9.17	9.57		15.79	14.79	19.14	18.39
Buffalo	.15	8.00	9.15	10.83	8.20	8.65	8.65	8.40	8.85	8.85	15.65	14.65	19.01	18.25
Chicago	.15	7.95	9.15	9.80	7.97	8.31	8.35	8.22	8.50	8.50	15.30	14.30	18.65	17.90
Cincinnati	.15	8.09	9.20	9.80	8.29	8.67	8.89	8.53	8.87	8.99	15.61	14.61	18.96	18.21
Cleveland	.15	7.93	9.13	9.70	8.07	8.54	8.72	8.31	8.67	8.75	15.39	14.39	18.74	17.99
Denver		9.70	11.30	12.49	9.80	9.70	9.80	9.95		10.65				17.60
Detroit	.15	8.18	9.40	10.15	8.32	8.66	8.89	8.52	8.86	8.85	15.46	14.56	18.81	18.16
Houston		8.80	9.75		7.75	8.80	8.00	8.05		10.65	15.50		19.30	19.05
Kansas City	.20	8.52	9.72	10.07	8.60	8.83	8.87	8.73		9.42	15.32	14.77	18.72	18.42
Los Angeles	.10	9.20	10.90	11.35	9.25	9.75	9.25	9.10	9.30	12.20	16.45	15.60	20.30	19.70
Memphis	.15	8.02	9.22		8.12	8.35	8.39	8.25		9.85				
Milwaukee	.15	8.08	9.28	9.93	8.10	8.44	8.56	8.35	8.71	8.72	15.43	14.43	18.78	18.03
New York	.10	8.55	9.76	10.31	9.00	9.11	9.01	9.11	9.48		15.02	14.69	18.42	18.29
Norfolk	.20	8.00			8.40	8.35	8.70	8.45		10.70				
Philadelphia	.10	8.25	9.17	10.34	8.92	8.78	8.80	8.81	9.18	9.41	15.61	14.61	18.96	18.21
Pittsburgh	.15	7.93	9.14	10.15	8.07	8.31	8.35	8.22	8.59	8.75	15.30	14.30	18.65	17.90
Portland		9.20	11.20	11.55	11.05	9.00	9.35	9.35		13.80	16.70	16.10	20.40	20.25
San Francisco	.10	9.05	10.40	10.90	9.05	9.30	9.15	9.15	9.90	12.40	16.45	15.60	20.30	19.70
Seattle		9.55	10.70	11.60	9.55	9.30	9.35	9.50	9.85	13.40	16.55	15.85	19.50	19.45
Spokane	.15	9.70	10.85	11.65	9.70	9.45	9.50	9.65	10.00	13.55		16.75		20.35
St. Louis	.15	8.29	9.49	10.16	8.34	8.67	8.82	8.58	9.11	9.11	15.66	14.66	19.01	18.26
St. Paul	.15	8.39	9.59	10.26	8.43	8.90	8.94	8.53		9.21		14.62		18.27

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.
† 16 gage. †† 13½¢ zinc. ‡ Deduct for country delivery.

(Effective June 30, 1957)

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.275	6.25	6.60				
Cleveland							13.85
So. Chicago *R3*				9.225			
Ensley *T2*	5.275	6.25					
Fairfield *T2*		6.25		9.225		6.275	
Gary *U1*	5.275					6.275	
Huntington *C6*		6.25					
Ind. Harbor *I3*	5.275		6.60	9.225		6.275	
Ind. Harbor *Y1*				9.225			
Johnstown *B3*		6.25					
Joliet *U1*			6.60				
Kansas City *S2*				9.225			13.85
Lackawanna *B3*	5.275	6.25	6.60			6.275	
Lebanon *B3*							13.85
Minnequa *C6*	5.275	6.75	6.60	9.225		6.275	13.85
Pittsburgh *P5*							13.85
Pittsburgh *J3*				9.225			
Seattle *B2*				9.725		6.425	13.85
Steelton *B3*	5.275		6.60			6.275	13.85
Struthers *Y1*				9.225			
Torrance *C7*						6.425	
Williamsport *S3*		6.15					
Youngstown *R3*				9.225			

COKE

Furnace, beehive (f.o.b. oven) Net Ton
Connellsville, Pa. ..... $15.00 to $15.75
Foundry, beehive (f.o.b. oven)
$17.50 to $19.00
Foundry oven coke
Buffalo, del'd $31.75
Detroit, f.o.b. 30.50
New England, del'd 31.55
Kearney, N. J., f.o.b. 29.75
Philadelphia, f.o.b. 29.50
Swedeland, Pa., f.o.b. 29.50
Painesville, Ohio, f.o.b. 30.50
Erie, Pa., f.o.b. 30.50
Cleveland, del'd 32.65
Cincinnati, del'd 31.84
St. Paul, f.o.b. 29.75
St. Louis, f.o.b. 31.50
Birmingham, f.o.b. 28.85
Milwaukee, f.o.b. 30.50
Neville, Is., Pa. 29.25

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	24.75	40	100,110	10.70
20	72	24.00	35	110	10.70
16 to 18	72	24.50	30	110	10.85
14	72	25.00	24	72 to 84	11.25
12	72	25.50	20	90	11.00
10	60	26.50	17	72	11.40
10	48	27.00	14	72	11.85
7	60	26.75	12	60	12.95
6	60	30.00	10	60	13.00
4	40	33.25	8	60	13.30
3	40	35.25			
2½	30	37.25			
2	24	57.75			

* Prices shown cover carbon nipples.

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper
Cast elliptical, 18 in. or longer, 5000 lb lots 47.92
Electrodeposited 39.25
Brass, 80-20, ball anodes, 2000 lb or more 50.00
Zinc, ball anodes, 2000 lb lots 21.25
(for elliptical add 2¢ per lb)
Nickel, 99 pct plus, rolled carbon, 5000 lb 102.25
(Rolled depolarized add 3¢ per lb)
Cadmium 1.70
Tin, ball anodes and elliptical $1.07 per in.

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum 74.80
Copper sulphate, 100 lb bags, per cwt. 24.35
Nickel salts, single, 100 lb bags 40.50
Nickel chloride, freight allowed, 300 lb 45.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums 23.05
(Philadelphia price 23.30)
Zinc cyanide, 100 lb 59.00
Potassium cyanide, 100 lb drum N. Y. 48.00
Chromic acid, flake type, 100,000 lb or more 31.00

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts	Pct Discounts: Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
½" and smaller x 6" and shorter	52½	56½	58½	59½
⅞" thru 1" x longer than 6"	43½	47½	50	51½
Rolled thread carriage bolts ½" & smaller x 6" and shorter	52½	56½	58½	59½
Lag, all diam. x 6" & shorter	52½	56	58	59
Lag, all diam. longer than 6 in.	44½	48	50	51
Plow bolts, ½" and smaller x 6" and shorter	52	55½	57	58

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.

	Full Case or Keg Price
¾ in. or smaller	61½
⅞ in. to 1 in. inclusive	57½
1⅛ in. to 1½ in. inclusive	62½
1⅝ in. and larger	56

C. P. Hex reg. & hvy.

¾ in. and smaller	61½
⅞ in. to 1½ in. inclusive	57½
1⅝ in. and larger	56

Hot Galv. Nuts (All Types)

¾ in. and smaller	48

Semi-finished Hex Nuts

¾ in. or smaller	61½
⅞ in. to 1½ in. inclusive	57½
1⅝ in. and larger	56

(Add 25 pct for broken case or keg quantities)

Finished

1 in. and smaller	64

Rivets

	Base per 100 lb
½ in. and larger	$11.50
	Pct Off List
7/16 in. and smaller	23

Cap Screws

	Discount (Packages) Bright Treated H. C. Heat
New std. hex head, packaged	
⅝" diam. and smaller x 6" and shorter	44 / 31
¾" ⅞" and 1" diam. x 6" and shorter	27 / 9
⅝" diam. and smaller x longer than 6"	14 / + 6
¾", ⅞", and 1" diam. & longer than 6"	½ / + 24

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	44	61
¾" through 1" dia. x 6" and shorter	27	49

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Discount Mach. Screws	Stove Bolts
Cartons	19	32
Bulk — Quantity		
To ¾" diam. incl. — 25,000-200,000	9	54
5/16 to ½" diam. incl. — 15,000-100,000	9	54
All diam. over 3" long — 5,000-100,000	—	54

Machine Screw & Stove Bolt Nuts

	Discount Hex	Square
In cartons	16	19
In Bulk — Quantity		
⅜" diam. & smaller — 15,000-100,000	7	9

CAST IRON WATER PIPE INDEX

Birmingham	119.0
New York	131.7
Chicago	134.1
San Francisco-L. A.	141.8

Dec. 1955 value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$105.00
Standards chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard, Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.	
in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.00
Midwest	16.35
Missouri Valley	15.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, West of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East. carloads	9.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	22.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe	88.0¢ to $2.90
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	37.4¢ to 41.5¢
Copper, electrolytic	45.75¢
Copper, reduced	49.75¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe .03 max. Del'd	$5.00
Lead	8.90¢ plus metal value
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel, unannealed	$1.00
Nickel, annealed	$1.06
Nickel, spherical, unannealed 2280	$1.13
Silicon	43.50¢
Solder powder 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	$1.02
Stainless steel, 316	$1.20
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh) $3.75 (nominal)	
Zinc, 10 ton lots	18.5¢ to 31.7¢

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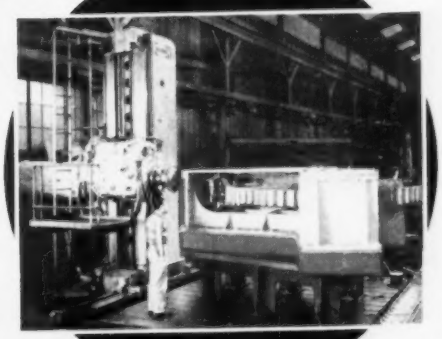
SERVICE FOUNDRY

A full complement of modern production tools in various types and sizes makes Avondale's foundry your ideal source for a well rounded casting and machining headquarters. One of our recent additions is an all-new electric furnace, further enlarging our foundry capacities. We are geared to cope with the needs of your industry. Our facilities are extremely versatile. The next time you need service, why not call "SERVICE" . . . Service Foundry, a division of Avondale.



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416 Erato Street • New Orleans, La., USA
CAnal 3836 • Cable Address: "Serfdry"

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is now possible and practical with

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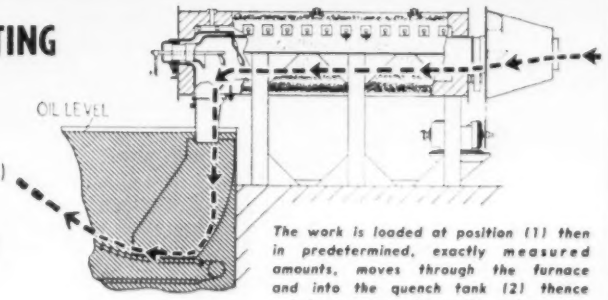
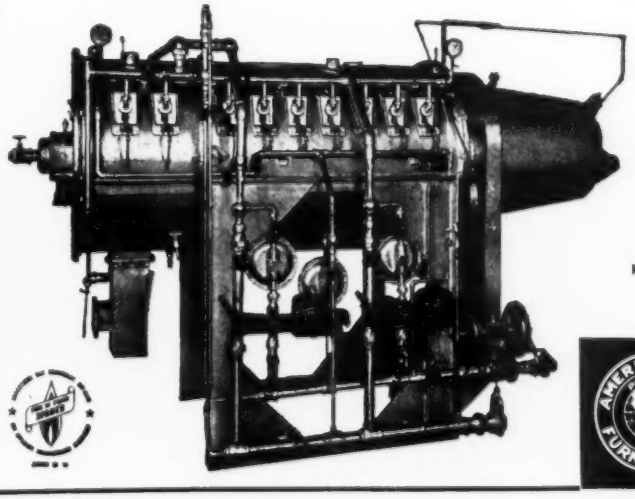


The work is loaded at position (1) then in predetermined, exactly measured amounts, moves through the furnace and into the quench tank (2) thence out by conveyor to washing, tempering or any desired further treatment.



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A completely new combustion system and other engineering features permit processing ferrous and non-ferrous parts at temperatures from 600°F. to 1850°F. Clean hardening, ammonia - gas case hardening, light case carburizing of steel parts or the heat treating of aluminum parts can be accomplished with equal ease and without any modification of the furnace.

AMERICAN GAS FURNACE CO.
1004 LAFAYETTE STREET, ELIZABETH 4, N. J.

FERROALLOY PRICES

(Effective June 30, 1957)

Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C ...	41.50	0.20% C ...	38.50
0.03% C ...	41.00	0.50% C ...	38.25
0.06% C ...	39.50	1.00% C ...	37.50
0.10% C ...	39.00	1.50% C ...	37.35
0.15% C ...	38.75	2.00% C ...	37.25

4.00-4.50% C, 67.70% Cr, 1-2% Si.. 27.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 27.75
0.025% C (Simplex) 34.75
0.10% C, 50-52% Cr, 2% max Si... 35.50
.50% max. C, 50-55% Cr, 3-6% Si.. 24.00
.50% C, 50-55% Cr, 3% max. Si... 24.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max C	$1.31
0.50% max C	1.31
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.40

Electrolytic Chromium Metal

Contract prices per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.29
Ton lots	1.31
Less ton lots	1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Contract price, carloads, delivered, lump, 3-in. x down, per lb of Cr, packed.

Carloads	44.65
Ton lots	48.95
Less ton lots	51.45

Calcium-Silicon

Contract price per lb of alloy, lump, delivered, packed.
30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

Calcium-Maganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	24.25
Ton lots	26.15
Less ton lots	27.15

SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ¼ in. x 12 mesh.

Ton lots	20.15
Less ton lots	21.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	17.20
Ton lots	18.70
Less ton lots	19.95

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.50
Ton lots to carload packed	19.65
Less ton lots	20.90

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.75
Johnstown, Pa.	12.75
Sheridan, Pa.	12.75
Philo, Ohio	12.75
S. Duquesne	12.75

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed	17.20

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen-removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn... 25.50

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si....	28.60	31.40	32.60

Silicomanganese

Contract basis, lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	15.10
Ton lots, packed, pallets	16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	23.70	22.40
98% Si, 0.75% Fe	24.45	23.15

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	7.70
Ton lots, packed	10.50

Electric Ferrosilicon

Contract prices, cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si ...	13.00	75% Si ...	16.40
65% Si ...	15.25	85% Si ...	18.10
		90% Si ...	19.50

Ferrovanadium

50-55% V contract, basis, delivered, per pound, contained V, carloads, packed.

Openhearth	3.20
Crucible	3.30
High speed steel (Primos)	3.40

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots..	2.40	3.30	4.55

Alsifer, 20% Al, 40% Si, 40% Fe. Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	10.65¢
Ton lots	11.80

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound Contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots	4.90
Less ton lots	4.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd ton lots, 2-in. x D per lb con't Sb plus Ta..... $4.25

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton..... $90.00
10 tons to less carload..... $110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti..... $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti..... $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered..... $2.60 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa. Langeloth, Pa. $1.33

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 contract, basis, per pound contained V_2O_5 ..... $1.38

Zirconium contract basis per lb of alloy
35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload..... $5.50

Bortam, f.o.b. Niagara Falls,

Ton lots per pound.....	45¢
Less ton lots, per pound...	50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.... 1.24
F.o.b. Wash., Pa.,Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B.....	.85
14 to 19%.....	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight, allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

Manganese-Boron, 75.00% Mn. 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots	$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si. 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots..... $2.15

COX MACHINES

Pipe Cutting and Threading
Tube Cutting Off
Metal Scrap Bundling

The Cox & Sons Company
Bridgeton, N.J.
Catalog upon request

ESTABLISHED SINCE 1868

Formed steel bridge rails

WE HAVE STEEL AND PRESSES --- for making these sections in lengths up to 20'..... steel up to ½" thick!

MAY WE BID ON YOUR REQUIREMENTS

— HARRISON SHEET STEEL CO. —
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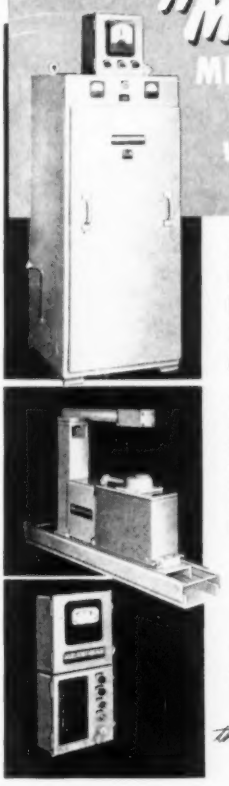
"MEASURAY"
MEASURES THICKNESS ACCURATELY without TOUCHING the MATERIAL



Hot or Cold Strip Steel, Brass, Copper, Aluminum . . . Plastics, Foils, Coated Fabrics, Film, Rubber, Etc., Even When Moving At High Speed.

Simple method—the "Measuray" shoots X-Rays through the material—measures its absorption of the rays. Calibrated meter registers plus or minus per cent of deviation from pre-determined standard. Especially useful on hot mills where material can't be checked by contact gages. Also when material can be deformed by contact such as foil.

"Measuray" is accurate to 1% of thickness or less. Quickly pays for itself in reduced scrap.

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"DAVIS" KEYSEATER
Low in Cost. Durable. Easy to operate.
Table adjustable for straight or taper keyways.
Three sizes. Keyways 1/16" up to 1".
DAVIS KEYSEATER CO.
400 Exchange St., Rochester 8, N. Y.

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4—50-Ton Capacity
COVERED HOPPER CARS

15—70-Ton Capacity

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Cleaned and Tested

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Overhead and Locomotive

IRON & STEEL PRODUCTS, Inc.

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Phone: Mitchell 6-1212

New York Office
50-B Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

"ANYTHING containing IRON or STEEL"

Western Sales Sag Called Temporary

West Coast used machinery dealers say sales are cooling off from hot pace earlier in the year.

Vacation shutdowns, uncertainty of military aircraft spending called chief reasons.

Expect buying pickup early in the fall.

▪ There's a marked slowdown both up and down the West Coast in used machinery sales. The hot pace of business enjoyed earlier this year by Los Angeles and San Francisco dealers is cooling off.

Buyers are stalling while they try to figure out possible effects of military budget cuts on guided missiles, electronics, and aircraft business there. And, holiday and plant vacation shutdowns are taking some of the edge off business.

Few dealers seem concerned. They look for an end-of-summer return to a fast sales pace.

Seek Future Business — Some dealers say they welcome a slow period. It gives them time to check the area's many new and expanding plants for future business.

Dealer inventories are in good shape. However, there is still some buying in eastern markets. Customers are willing to pay the freight for a needed machine.

Topping the Los Angeles best seller list: No. 3 to No. 5 turret lathes; No. 4 and No. 5 mills; grinders; sheet metal equipment.

Expect Pickup — One Northern California dealer calls the market "medium rare," says volume in the area is down from the first quarter of this year and the like period last year. But he insists "The outlook is good and we expect a sharp pickup for the last half of 1957."

The spotty nature of the used machinery business in the San Francisco Bay area is obvious from the wide range of dealer comment. One dealer says things are slow, "with the outlook for more of the same." But another declared "it's still holding up in grand style."

Demand For Drills—All dealers seem to agree on this: radial drills sell like hot cakes—"if you can only get hold of them." Because the demand for used radial drills exceeds supply, foreign units are making strong inroads in the market.

Other good movers in used machinery, less than five years old, are turret lathes, grinders, and milling machines.

Foreign Units Cheaper—Foreign machinery is not viewed with favor among most dealers handling both new and used lines. Foreign items sell for about 70 pct of U. S. equivalents.

Most San Francisco dealers claim buyers prefer U. S. machinery when available. It still takes lots of hard selling to move foreign tools.

In Seattle, there's strong demand for used milling machines in good condition. One machinery company executive says, "I can't say why exactly, but we've got more inquiries than we can handle."

Intra-Area—Lathes, traditionally strong sellers, are available and not being sought. Seattle-area transactions, by and large, are local affairs. Used machinery dealers report they are rarely turning to eastern suppliers now.

CONSIDER GOOD USED EQUIPMENT FIRST

AIR COMPRESSOR
150 cu. ft. Ingersoll Rand XRE, 100# Pressure
100 H.P. Westinghouse Motor 440/3/60
BENDER & STRAIGHTENER
Pels Type JH-26 Bends & Straightens Beams 15x5 81460 lb., Angles Equal 8x8x1/2", etc
BENDING ROLLS
10' x 1/2" Kling Pyramid Type—LATE
10' x 3/4" Ransome, Pyramid Type
20' x 1" Hilles & Jones Pyramid Type
BRAKES—LEAF TYPE
8' x 3/16" Dreis & Krump
12' x 1/4" Dreis & Krump
12' x 1/2" Dreis & Krump No. 228
BRAKE—PRESS TYPE
12' x 1/4" Superior Hydraulic—NEW
BUILDINGS
70' x 760' x 30'
50' x 325' x 24'
BULLDOZERS
27 Axis, 22" Stroke, 12"x65" Face of Crosshead
237 WAW, 22" Stroke, 16"x80" Face of Crosshead
CORRUGATING MACHINE
12" Stainless Corrugating Machine, Rolls 24" Dia
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	56' Span 220-3/60
5 ton Whiting	48' Span 230-3/60 A.C.
5 ton Case	59' Span 220-3/25
5 ton P&H	55' Span 220-3/60
10 ton Shepard Niles	38' Span 440-3/60
15 ton Shepard Niles	52' Span 230 Volt D.C.
15 ton Shepard Niles	37' Span 220-440 A.C.
15 ton Shepard Niles	55' Span 220-440 A.C.
15 ton Niles	75' Span 220-3/60
20 ton P&H	55' Span 220-440 A.C.
25 ton Cleveland	70' Span 220-3/60
With 10 ton Auxiliary (Mill Type)	

DIEING MACHINE
60 ton Henry & Wright, Roll Feed, Scrap Cutter
4" Stroke NEW 1950
DRAW BENCH
10,000# Aetna Standard Single Draw Tube Draw Bench, 44-44 Max. Length of Draw
FORGING MACHINES
1" to 5" Acme, Ajax, National
HAMMERS—BROAD DROP—STEAM DROP—STEAM FORGING—800 lb. to 20,000 lb.
LEVELERS—ROLLER
27" Torrington, 19 Roll 1-31/32" Dia. Backed up
12" Bliss, Capacity .125" LATE
54 McKay, 17 Rolls, 2¾" Dia.
108" American 17 Rolls 4½" Dia
PLANER—PLATE EDGE
350" Southwark, 16 Prem, Jacks, Cuts 1½"
PRESSES—HYDRAULIC
800 ton Clearing, 48" Stroke, Bed 48 x 48"
2000 ton Bliss Hydro-Dynamic, 18" Stroke Bed Area 54" x 55"
1500 Baldwin-Lima-Hamilton Hydr. Forging Press
PRESSES—TOGGLE DRAWING
250 Bliss 125 ton, Bolster 18" x 26"
24 Bliss 120 ton, Bed Area 31" x 31"
2 108 Bliss 1550, Die Space 60" x 72"
PUNCH & SHEAR COMBINATIONS
Cleveland Style G, Single End, 60" Throat
Cleveland Style W, 60" Throat
No. 1½" Buffalo Universal Ironworker
ROLLING MILLS
6" x 6" Torrington Wire Flattening Mill Line
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 36" Farrel Two Stand Two High
26" x 72" Cold Rolling Mill
ROLL—FORMING
11 Stand Dahlstrom Takes widths to 8"
SHEAR—ALLIGATOR
No. 1 Mesta RH-LK Capacity 2" x 12"
SHEAR—BAR
18" Mesta Bar Shear Capacity 4" x 35" Static Hd.
SHEAR—GATE
12' x 3/8" Niagara Model 1212, NEW 1951
SHEAR LINES
50" Hallden Shear Line
60" Shear Line, With Leveller & Tables
90" x 14 Ga. Cleveland, With Playoff, Leveller, Eject
SHEARS—SQUARING
6' x 10 Ga. Niagara No. 672
8' x ¼" Niagara NEW 1952
ROLLS—PLATE STRAIGHTENING
52" Hilles & Jones 9 Rolls 11" Dia
60" Niles-Bement-P.T. Rolls 10¾" Dia
SHEARS—ANGLE
6"x6"x⅞" Hilles & Jones
4"x4"x⅝" Long & Allstatter
10"x6"x1" Cincinnati
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24" Yoder Slitting Line
36" Yoder Slitting Line
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No. 3 Medart 9 Roll Capacity to 1½" Tubing
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#2A Fenn, Capacity 3½" Tube 2½" Solid 10T
Hill-Lesowitz H-Draft Feed LATE
TUBE MILL
Etna 1K Welded Tube Mill, Cut-off & Transformer
Capacity 3/8" OD x .028 Wall to 2" OD x .120 Wall
WELDERS—SEAM
200 KVA Progressive Universal 220 Volt
300 KVA Federal Circular 440 Volt
500 KVA Federal Longitudinal 440 Volt

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MISCELLANEOUS
Welder, 100 KVA Taylor Winfield
Welder, 50 KW Sciaky Dynatrol automatic, press spot
Threader, Model 11S Rickert-Shafer nipple machine
Threader, 9-16" National precision thread roll
Threader, Type R Economy threader and pointer
Sloter, 36" Rockford hydraulic vertical, late MD
Shaper, 36" Rockford openside universal shaper-planer, mechanical
Roll, No. 1L Kane & Roach vertical bending
Roll, No. 18 Kane & Roach straightening
Planer, 30" x 30" x 8' Cincinnati, two rail, one side head
Lapper, No. 2 Cincinnati centerless, MD
Hone, No. 224-B Barnes hydraulic single spindle
Engraver, Model BL 2416 Pratt & Whitney Keller, 3 spindle
Compressor, 650 CFM Sullivan Class WJ-3 angle compound
Compressor, 390 CFM Ingersoll Rand type XRE, 2 stage
Cut-off, 6" capacity Campbell "Cutamatic" abrasive
Cut-off, No. 2A Modern automatic, late

SAWS
10½" x 10½" No. 3 Motch & Merrywether cold metal
10" x 10" Racine hydraulic shear cut
6" x 6" Peerless universal
6" x 6" No. 6 Marvel high speed

PRESSES
750 ton No. 3 National Maxi-press, all steel, forging, late
106 ton No. 78 Toledo S.C., overhanging, gap (two)
60 ton Henry & Wright high speed, dieing
50 ton Henry & Wright high speed, dieing (two)
95 ton No. 8 Bliss Consolidated OBI, MD
60 ton No. 600B Perkins, OBI
800 ton Model 2E48-800 Hamilton S.S., S.C., air clutch, late
113 ton No. 66 Bliss Consolidated S.S., tiered frame, DBG
106 ton No. 56 Toledo, S.S., S.G., tiered (three)
250 ton Williams & White 4 gost hydraulic
150 ton HPM Hydro-Power Fastraverse, hydraulic
100 ton HPM Hydro-Power hydraulic
350 ton No. 18T Cleveland double action, toggle drawing, S.C.
260 ton No.796½-72 Toledo double crank, toggle drawing
120/180 ton No. 174-S Toledo double action, toggle drawing, S.C.
200 ton No. 7 x 72" Bliss double crank s.s. tiered
126 ton Model 60D66 Cleveland s.s. double crank, tiered
600 ton No. 664 Toledo knuckle Joint coining

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4000 lb. Chambersburg Double Frame Steam Forg. Hammer

2500 lb. Erie Single Leg Steam Forg. Hammer

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25 Transformer and Generating Arc Welders

2500 lb. Model E Chambersburg Steam Drop Hammer, New 1944

6' x 10 ga. Cincinnati Squaring Shear

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Qu	KW	Make	RPM	D.C. Volts	A.C. Volts
5	1500	Al.Ch.	514	350/700	13800 /2300 4160
1	1500	G.E.	514	700	2300 4000
1	1450	Whse.	900	600	2300 4000
2	1250	Al.Ch.	720	600	2300/4000
1	850	G.E.	720	240/350	2300
1	725	Whse.	900	600	2300/4000
1	500	Cr.Wh.	720	600	2300 440
1	500	G.E.	900	250	2300
4	300	Whse.	1200	125/250	2300
1	300 (3-unit)	Al.Ch.	1200	250/300	2300
2	200	Whse.	1200	125/250	2300/440
2	150	Rel.	1200	125	2300/440
1	150	Whse	1200	125/250	2300 440
1	150	G.E.	1200	250	4600/2300
1	100	Whse.	720	125/250	220
1	75	Whse.	1200	125/250	2300

2—400 KW, G.E. sealed Ignitron Mercury Arc Rectifiers complete with AC and DC switchgear and 475 KVA Pyranol Transf. 2400 V, 3 ph., 60 cycle

DIRECT CURRENT MOTORS
230-Volt

Qu.	H.P.	Make	Type	R.P.M.
1**	1500	Whse.	Encl.	600
1**	700	Whse.	Encl.	143
1	700	Whse.	Encl.	300/700
2**	600	Whse.	Mill	300/1600
2	600	Whse.	QM	110/220
1	400	G.E.	MPC	450
1	300	Whse.	Mill	300/900
1	300	Whse.	Mill	300
2	275	Whse.	QM	425/850
1	200/250	El.Dy.	Ped. Brg.	400/1200
1	180	G.E.	MPC	400
1	175	G.E.	CD-175-A	850/1025
1	125	Whse.	SK-184	575/850
1	80	Rel.	651-T	575/1150
1	80	El.Dy.	25-S	525/1050
1	80/75	Whse.	SK-151	250/1000
1	50	Whse.	SK	500/1500
1	50	Whse	SK-141	250/1000
2	30/40	Whse.	SK-143	500/1500
1	35	Whse.	SK	250/1000
1	32½	Whse.	SK-150	400/1200
1	25	Whse.	SK-121	200/1200
2	15	Whse.	SK-93	575/1725
1	5-7½	Rel.	T.E.F.C.	337/1350

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All others—230 volts

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1—5" SQUARE CAPACITY ALLIGATOR SHEAR
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1—48" MESTA GANG SLITTER FOR SHEETS
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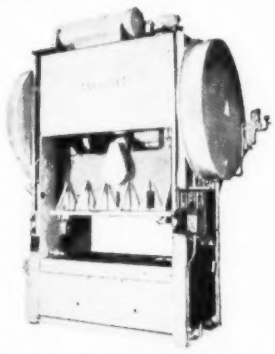

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184	CFM	135	psi	8 x 9 Chic-T	
234	CFM	100	psi	9 x 9 Ing.ESI	
268	CFM	500	psi	10-4½ x 10 Ing.	XOB
368	CFM	100	psi	12 x 10 IR-CP-Penn	
420	CFM	40	psi	12 x 9 Ing.ES-Oil-Less	
465	CFM	100	psi	12 x 11 Penn 3AT	Gardner X
528	CFM	100	psi	14 x 12 IR-CP-Penn	
585	CFM	100	psi	15-9¼ x 12 IR-XRE	3-60-440
669	CFM	50	psi	15 x 11 Worth. HB or HS	
676	CFM	100	psi	15-9¼ x 12 Ing.	XRB
1050	CFM	100	psi	18-11 x 14 Ing.	XCB
1050	CFM	100	psi	18-11 x 12 Penn DE2	3-60-2300
1385	CFM	100	psi	13-8 x 7 Joy WN114	3-60-440
1721	CFM	100	psi	23-14 x 16 Ing. PRE2	3-60-2300
2900	CFM	100	psi	29-18 x 21 Ing. PRE2	3-60-2300
3460	CFM	100	psi	23-13 x 18 CP OCTDE	3-60-2300
5748	CFM	50	psi	29-29 x 21 Ing. PRE1	3-60-2300

PORTABLES—60-600 CFM Rotary or reciprocating

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1	1500	G.E.	MT	6600	1187
1	1100	F.M.	6VZK, B.B.	4800	1800
1	800	G.E.	MT	2300	293
1	750	G.E.	MT-573	2200	1190
1	700	A.C.		2300	500
1	500	Whse.	CW	550	350
1	400	Whse.	CW	440	514
1	350	Cr.Wh.	Size 71	208/416	1765
1	350	G.E.	IM-17A	440/2200	720
1	250	G.E.	MT-424Y	4000	257
1	250	Cr.Wh.	Size 290	2300	350
1	250	Al. Ch.		550	600
1	200	G.E.	IE13 B-M	220/440	1760
1	200	G.E.	MT-557Y	220/440	1760
1	200	Cr.Wh.	20QB	440	585
1	200	G.E.	IM	440	435
3	200	G.E.	I-17AM	2200	435
1	200	G.E.	IM	2200	580
1	150 (unused)	Whse.	CW	2300	435
1	125	A.C.		440	865
1	125	Al. Ch.		440	720
1	100	G.E.	IM-10	2200	435
1	100	G.E.	IM	440	600
4	100	A.C.	ANY	440	695

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1	650	G.E.	FT-559BY	440	3570
3	500	Whse.	CS-1216	2200	580
2	450	Whse.	CS-1420	2300/4150	354
1	400	G.E.	IK	2200	300
1	300	G.E.	KT-559A	2300	1775
1	200	G.E.	IK-17	440	580
2	200	G.E.	KT-557	440	1800
1	150/75	G.E.	IK	440/900	450
1	150	Whse.	CS856S	440	880
1	150	Whse.	CS	440	580

SYNCHRONOUS

Qu.	H.P.	Make	Types	Volts	RPM
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1	4350	C.W.	3501SL4000	6900/13800	514
1	2850	Whse.	.8p.f.	2300/4600	514
1	2800	Whse.	.8p.f.	2300	720
1	2000	Whse.		2300	120
2	1750	G.E.	ATI	2300	5600
1	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	128.5
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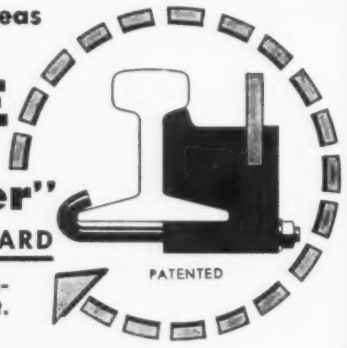

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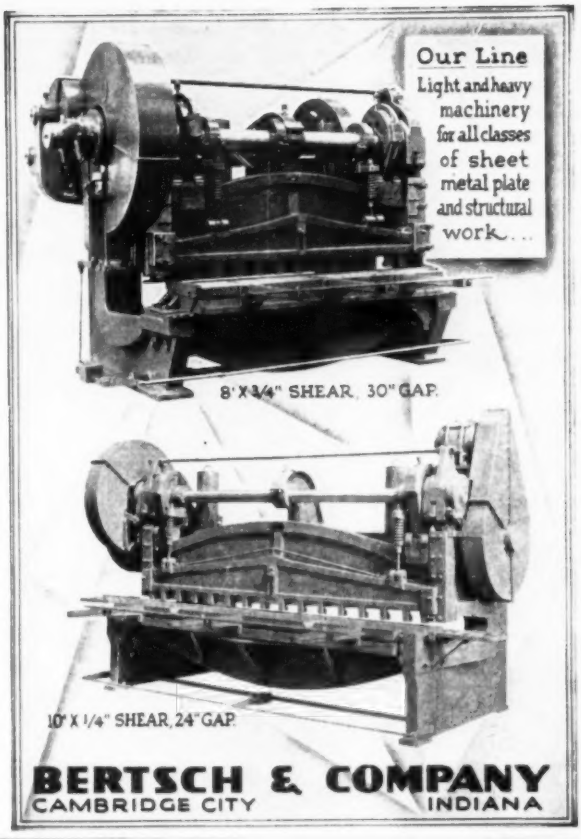
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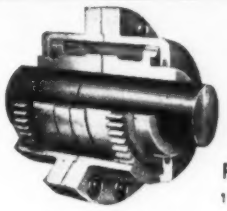

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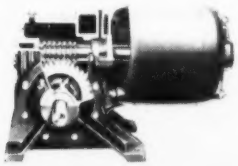

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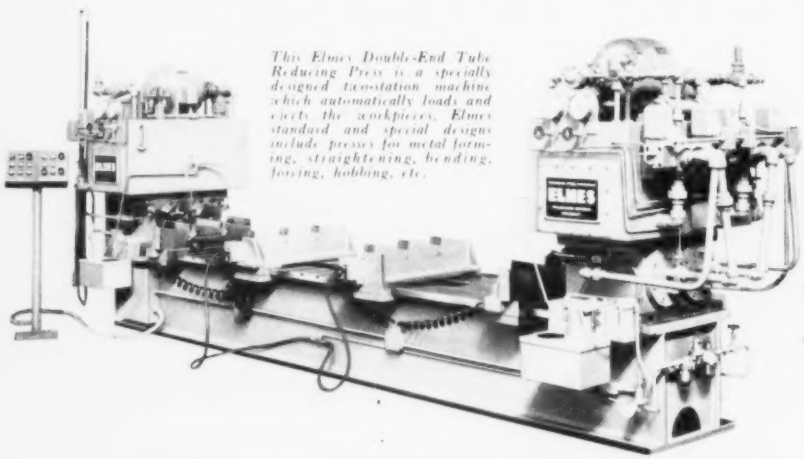

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